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DODGE'S GEOGRAPHY OF UTAH

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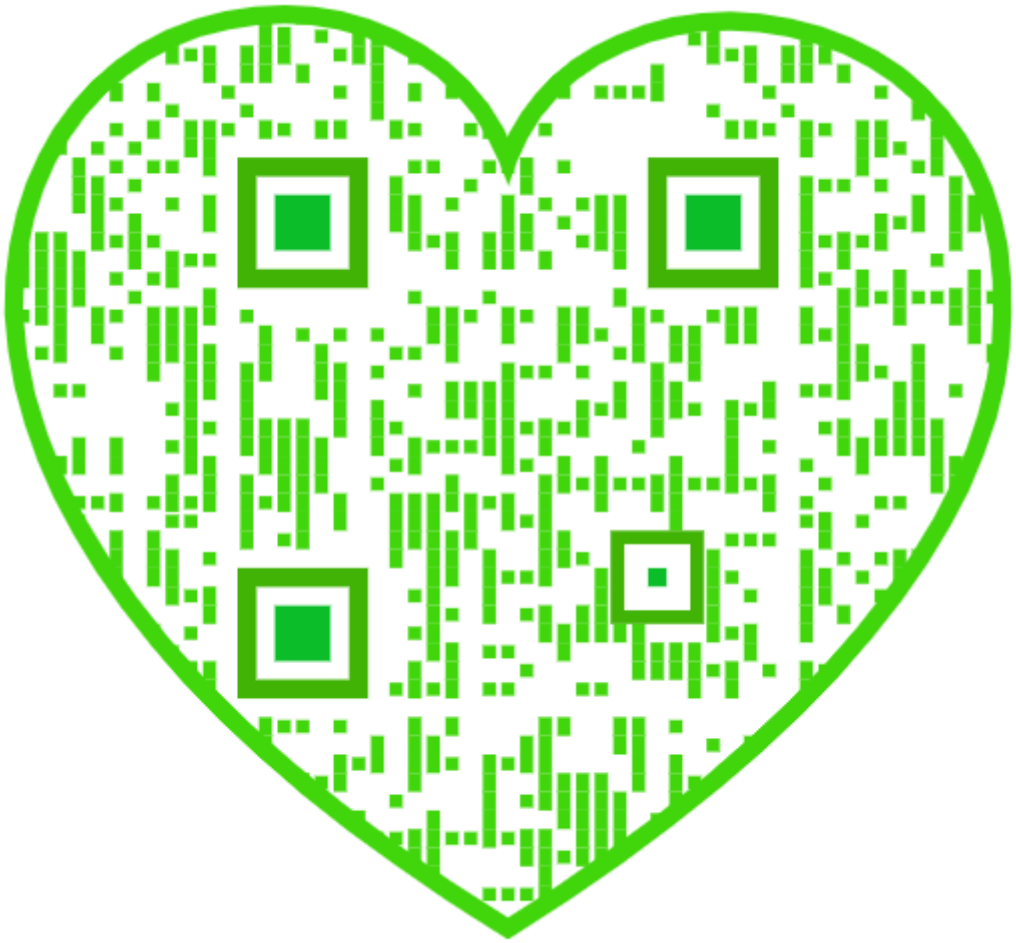


DODGE'S GEOGRAPHY OF UTAH

By

JOHN A. WIDTSOE

President of the Agricultural College of Utah

and

WILLIAM PETERSON

Professor of Geology, the Agricultural College of Utah

Part I

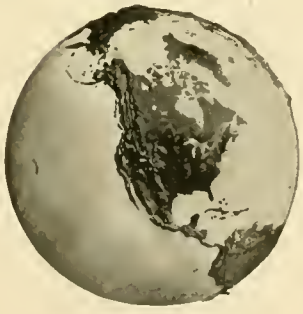
UTAH AS A WHOLE

Part II

THE GROWTH AND DEVELOPMENT OF CITIES

Part III

STATISTICS AND AIDS TO TEACHERS



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THE INTRODUCTION

HOME Geography is usually the first work to be taken up in any study of geography because beginning students need to know first the geography of the locality in which they live, in which they are most interested, and with which they are most familiar from personal experience. The results gained from a study of the region they can see gives them the ability to understand remote regions that can only be pictured or described to them. Because our own home locality is of most interest to us is also a reason why we need to know it better than we need to know any other region of the world. Hence at some time during the school course it is most valuable to make a careful study of the state or group of states in which we live that we may have a better understanding of the geography about us than we can get from the necessarily brief accounts given in a text-book of geography.

In a text-book of geography we study the relation of one state or group of states to the whole country of which our home region is a part, and our commercial relations to the world as a whole. It follows that in such a treatment the characteristics that distinguish our own home regions must largely be lost to sight in the consideration of the great features that distinguish the country as a whole.

In a special text-book devoted to one state or group of states we can learn more about our own region, its important surface features, its climate, the occupations of its people, its products, its local commerce, its history, its chief cities, and many other features of great interest to us. Hence we need to make a special study of our home locality after we have studied the larger region of which it is an important part. A local geography is not only valuable for study in school that we may know well the region about us, but it is valuable also as a reference volume to which we can refer for facts about our own state in our homes whenever in our reading or conversation some question arises concerning our own state which needs to be answered at once.

In this text-book the surface features, the climate, the soil and other natural resources which determine the occupations of the people are studied first because they are the large features which determine the distribution and success of industries. One of the great lessons the student learns in geography is Man's absolute dependence upon Nature for his existence. In this state, as in other regions, topography and climate pointed out the path of development that communities must follow in order to make sure their existence within its borders. In the pages that follow, the student finds traced the fundamental conditions that have moulded the life of the state. After these come the historical events that are landmarks in its growth, and then the study of the industrial and commercial features is taken up. To these, which explain the reasons for the development and growth of the larger cities, and which show us why our own region is important to the country as a whole, careful attention has been given.

Certain facts like the distribution and character of educational institutions, the distribution of congressional districts, and the form of government in the region are included, because our knowledge of our own locality would be incomplete without them. These fittingly illustrate the political unity that binds together the interests of all the individuals who form the body-politic which we call the state.

That this book may prove especially valuable as a reference work which may properly be made a part of the family library for constant consultation on many points, carefully prepared diagrams, tables of statistics, and references to further reading have been included.

RICHARD ELWOOD DODGE.

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THE GEOGRAPHY OF UTAH

By John A. Widtsoe, *President, and* William Peterson, *Professor of Geology, the Agricultural College of Utah.*

I. UTAH AS A WHOLE

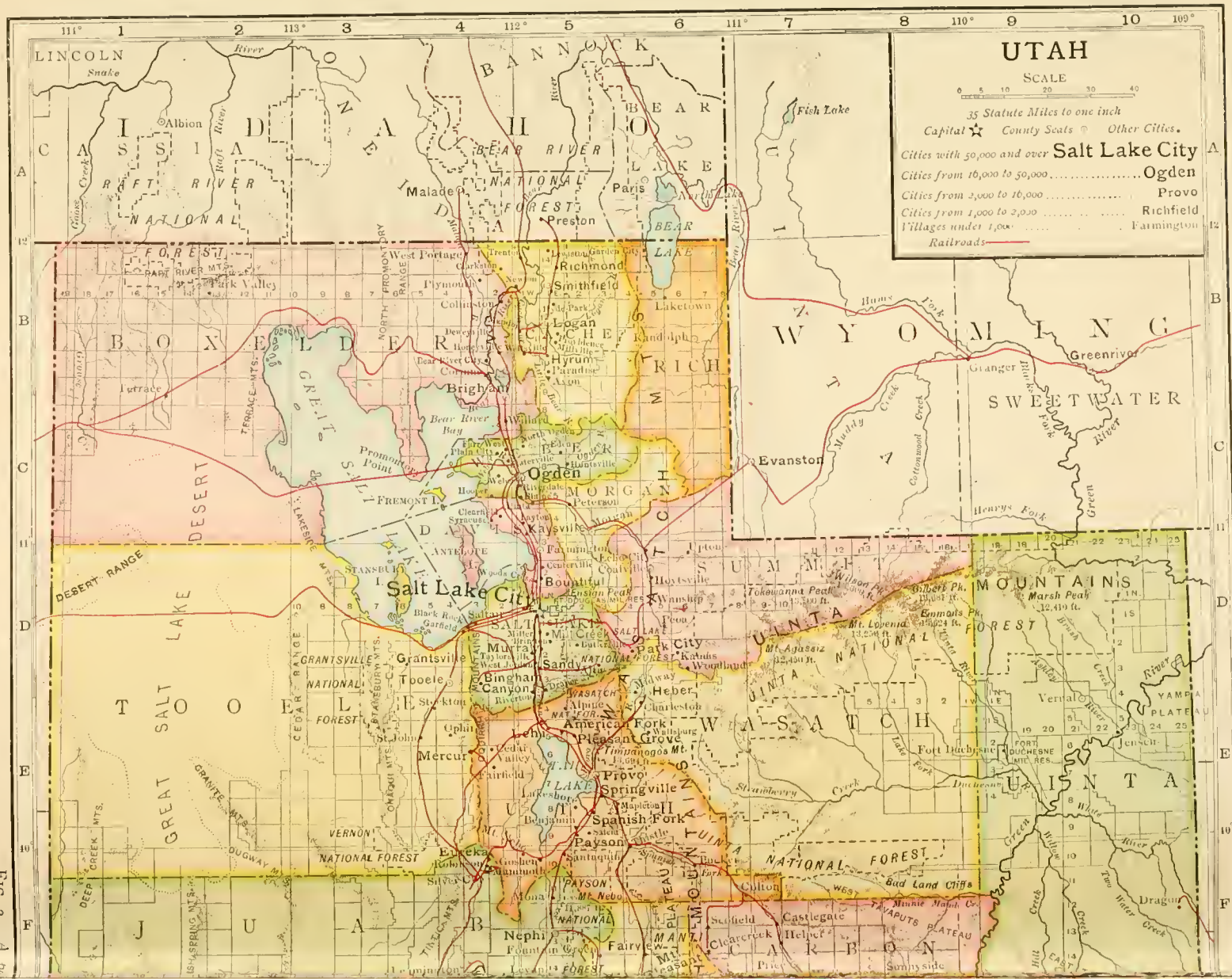
Size and Location. The state of Utah, lying in the heart of the plateau section, has an area larger than that of New York and Maine, and very nearly as great as that of Pennsylvania and Virginia combined. The original area when Utah was set apart as a territory, September 9, 1850, was much larger. (Fig. 4.) It was "bounded on the west by the state of California; on the north by the territory of Oregon; on the east by the summit of the Rocky Mountains; and on the south by the 37th parallel of north latitude."

Since that time large parts of the original territory have been included in the present states of Nevada, Wyoming, and Colorado. The southern boundary, however, except in length, has remained unchanged. The present boundaries of the state are all meridians and parallels. It stretches from 37 degrees to 41 degrees north latitude, and from 109 degrees 4 minutes to 114 degrees 4 minutes west longitude. (Fig. 2.) The area thus defined comprises 84,970 square miles, of which 2,780 square miles are water surface. This area is divided into twenty-seven counties. (Part III, p. 39.) Of these San Juan County is larger than Massachusetts, and Boxelder County is nearly as large as New Jersey.

Owing to its position to the west of the best passes across the Rocky Mountains, Utah has shared in the railway commerce between the Central Western and the Pacific Coast states. Its larger cities have grown up near these passes because of their favorable location as railway centers.

Surface. The surface of the state is extremely varied and is naturally though roughly divided into two sections by the Wasatch Mountains. (Fig. 3.) These enter Utah in Cache County on the northern border, extending southward to about the middle

Fig. 1. *A view of Great Salt Lake. Here may be seen Black Rock, one of the most historic landmarks of the state.*


UTAH
SCALE
0 5 10 20 30 40
35 Statute Miles to one inch
Capital ☆ County Seats ○ Other Cities.
Cities with 50,000 and over Salt Lake City
Cities from 16,000 to 50,000 Ogden
Cities from 2,000 to 16,000 Provo
Cities from 1,000 to 2,000 Richfield
Villages under 1,000 Farmington
Railroads
Salt Lake City
Ogden
Provo
Logan
Evanston
Greenriver
Park City
Richmond
Smithfield
Brigham
Bountiful
Kaysville
Murray
Sandy
Grantsville
Tooele
Heber
American Fork
Pleasant Grove
Springville
Spanish Fork
Payson
Eureka
Mercur
Nephi
Fairview
Scofield
Castlegate
Helper
Price
Sunnyside
Dragon
Vernal
Roosevelt
Albion
Malad
Preston
Paris
Fish Lake
Lakeside
Laketown
Randolph
Hyrum
Paradise
Wellsville
Tremonton
Garland
Corinne
Promontory Point
Fremont I.
Antelope I.
Stansbury I.
Timpanogos Mt.
Lake Bonneville
Great Salt Lake
Great Salt Lake Desert
Bear River Bay
Bear River
Raft River
Snake River
Green River
Duchesne River
Strawberry Creek
Provo River
Weber River
Jordan River
Cottonwood Creek
Muddy Creek
Henrys Fork
Uinta Mountains
Wasatch Mountains
Oquirrh Mts.
Stansbury Mts.
Cedar Range Mts.
Deep Creek Mts.
Granite Mts.
Ibapah Mts.
Fish Springs Mts.
Terrace Mts.
Raft River Mts.
Grouse Creek Mts.
Promontory Range
Desert Range
Lakeside Mts.
Oquirrh Mts.
Bear River National Forest
Cache National Forest
Wasatch National Forest
Uinta National Forest
Fishlake National Forest
Vernon National Forest
Payson National Forest
Manti National Forest
Sevier Plateau
Wasatch Plateau
Book Cliffs
Tavaputs Plateau
Uinta Basin
Utah Lake
Strawberry Reservoir
Deer Creek Reservoir
Echo Reservoir
Rockport Reservoir
Pineview Reservoir
Hebgen Lake
Fort Duchesne
Fort Bridger
Wyoming
Idaho
Nevada
Colorado
Arizona
Lincoln
Bannock
Bear Lake
Cassia
Oneida
Box Elder
Cache
Rich
Morgan
Summit
Wasatch
Uinta
Duchesne
Daggett
Sweetwater
Tooele
Juab
Millard
Beaver
Iron
Washington
Kane
Garfield
Piute
Sevier
Carbon
Emery
Grand
San Juan
Wayne
Weber
Davis
Salt Lake
Utah
Wilson Peak
Tokewanna Peak
Gilbert Pk.
Marsh Peak
12,410 ft.
Emmons Pk.
Mt. Lovenia
Mt. Agassiz
Timpanogos Mt.
Bad Land Cliffs
Minnie Maud Cr.
Two Water Creek
Hill Creek
Willow Creek
Whiterocks River
Strawberry River
Ashley Creek
Brush Creek
Yampa Plateau
Fort Duchesne
Ouray
Randlett
Jensen
Lapoint
Myton
Roosevelt
Duchesne
Tabiona
Hanna
Kamas
Woodland
Francis
Coalville
Wanship
Peoa
Oakley
Holden
Fillmore
Meadow
Scipio
Delta
Hinckley
Deseret
Oasis
Sutherland
Abraham
Levan
Fayette
Gunnison
Manti
Ephraim
Mt. Pleasant
Spring City
Fountain Green
Moroni
Sterling
Wales
Mona
Santaquin
Goshen
Lake Shore
Benjamin
Lehi
Saratoga
Vineyard
Orem
Provo Bench
Pleasant View
Harrisville
Riverdale
Roy
Clearfield
Layton
Kaysville
Centerville
Farmington
Woods Cross
Bingham Canyon
Riverton
Draper
Midvale
Murray
Taylorsville
West Jordan
Sandy
Alpine
Lehi
Cedar Valley
Fairfield
Eureka
Silver City
Mammoth
Tintic
Dividend
Goshen
Santaquin
Mona
Nephi
Levan
Fayette
Gunnison
Manti
Ephraim
Mt. Pleasant
Spring City
Fountain Green
Moroni
Sterling
Wales
Fairview
Thistle
Soldier Summit
Price
Helper
Castlegate
Scofield
Clearcreek
Sunnyside
Wellington
Dragon
Myton
Roosevelt
Duchesne
Tabiona
Hanna
Kamas
Woodland
Francis
Coalville
Wanship
Peoa
Oakley
Holden
Fillmore
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Wellington
Dragon

Fig. 2. A pu

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ical map of Utah.

of the state. Beyond that point, losing their identity as ranges, they continue southwestward almost to the border of the state in a series of high but gradually descending plateaus. To the east of these ranges lies the plateau region, and to the west the Great Basin with its interior drainage. (Fig. 3.)

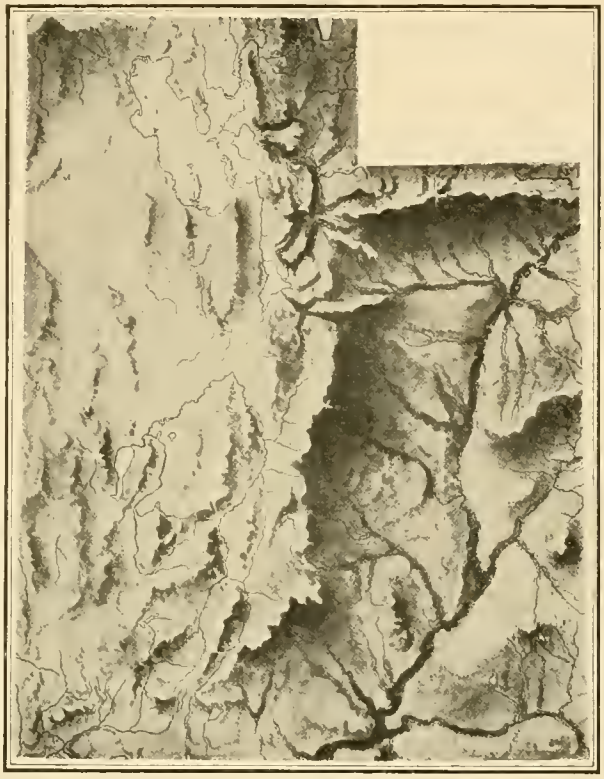

FIG. 3. *A relief map of Utah.*

The plateau ranges from 6,000 to 8,000 feet in height, above which rise groups like the Henry, Abajo, and La Sal mountains, 11,000 to 13,000 feet high. Into this great plateau on the south the Colorado has cut its world-famous canyon. This is an enormous gorge cut by the river from the plateau surface far down into the nearly horizontal rocks. Below may be seen the isolated peaks left between the small side streams that are actively engaged in cutting back into the plateau. From the river level, several thousand feet below, these peaks rise like veritable mountains, higher and fully as grand as any to be found among the Appalachians. In some places the streams have tunneled a way beneath the horizontal strata at the top of the plateau, thereby forming great natural bridges. (Fig. 5.)

The Great Basin west of the Wasatch Mountains is really a region of many basins or broad valleys divided by narrow mountain ranges. Some of these basins are isolated; others are connected or separated by the short mountain ranges. These ranges rise above the plain from only a few hundred to about three thousand feet. They are known as the Basin Ranges, and are block mountains. We call them block mountains, because they are blocks of strata which have been broken and slightly tilted, and not folds of strata like the Uinta Mountains to the northeast. Generally the higher portion of each block is on the west, so that the block faces the west in a steep front and east slopes gently down to the floor of the plain. The steep side represents the line along which the rocks have been broken, or faulted, and later tilted. The edges of the blocks are not regular, as might be expected from the process of formation, but irregular because running water has cut valleys back into the

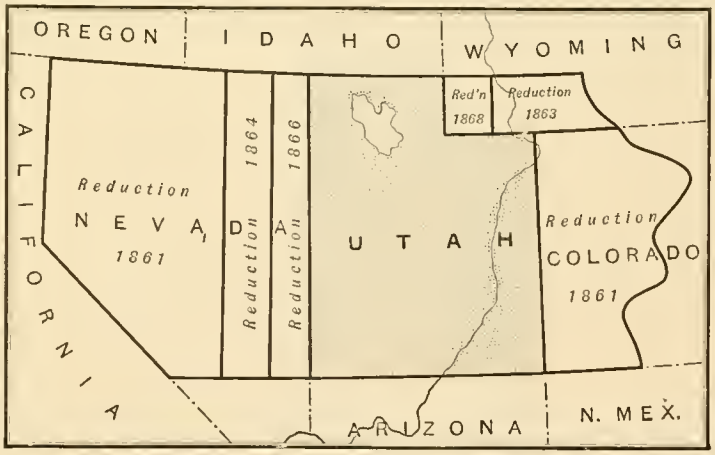

FIG. 4 *The original area and reductions of the territory of Utah.*

FIG. 5. *A view of the great natural bridge in San Juan County. The width of the great span is ninety-four feet, the highest elevation from top to bottom one hundred eight feet, while the roadway at the top is thirty feet wide.*

blocks, and carved them into numerous peaks and ridges similar to those of other mountains.

The western front of the Wasatch Mountains is formed by a great uplift similar in character to that which has caused the general outline of the block mountains. The displacement, which began ages ago, and is still in progress, has slowly raised the great escarpment (Adv. Geog., p. 34) to the west until it has amounted to many hundreds of feet. Some of this uplift has been removed by the rivers, and as a result of this erosion peaks like Timpanogos (12,300 feet) (Fig. 7) have been left. That portion known as the Wasatch Plateau (Fig. 3) has an elevation ranging from 8,000 to 11,000 feet. Aquarius Plateau, farther south, has about the same elevation.

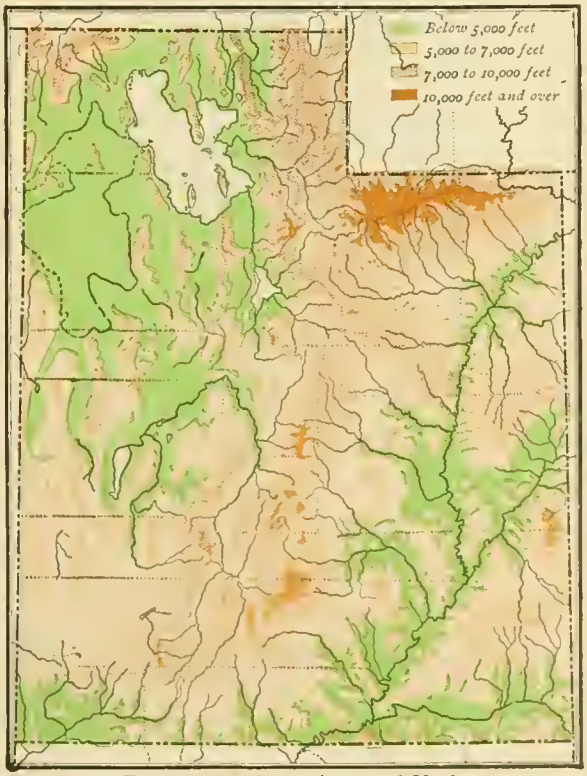

FIG. 6. *A physical map of Utah.*

During the development of the Wasatch escarpment a small block was cut from the Wasatch group, and, as a result of this, the mountain front has two escarpments from Ogden northward to the state line. Between the two escarpments lies the beautiful mountain-rimmed Cache Valley, thirty miles long and very nearly ten miles wide.

FIG. 7. *Timpanogos Peak, Wasatch Mountains. These mountains abound in grand and rugged scenery.*

The Uinta Mountains are a broad, dome-like uplift 100 miles long and cut off to the north by a fault. In the center of this great arched rock the strata are horizontal. Owing to its height, rivers have been able to cut deep into this area and have formed many picturesque canyons and valleys. The highest altitudes in the state are found in the Uintas. (Fig. 6.) Gilbert Peak with an elevation of 13,687 feet reaches the greatest height, but it only slightly exceeds Emmons Peak (13,624 feet), Wilson Peak 13,300 feet), Mount

FIG. 8. *Glaciated area in the Uintas at the head of Weber Canyon. Ice passed over this section so recently that the rock has not yet had time to weather into soil.*

Lovenia (13,250 feet), and Tokewanna Peak (13,200 feet).

This whole region is so high that once, like many of the peaks of the Wasatch, it was covered by glaciers which crept far down the valleys. The evidence of the glaciers is seen in the boulder-covered moraine ridges, and in the hundreds of glacial lakes (Fig. 16) which add much to the beauty of a region renowned for the grandeur of its scenery.

Courtesy of H. L. A. Culmer.

FIG. 9. *The great organ rock southwest of Bluff. This rock 490 feet high and 350 feet wide at the base is a remarkable example of rock sculpture.*

Geology. The rocks which outcrop within the state, and from which through erosion the soils have been derived, vary greatly in character. (Figs. 8, 9, and 11.) In the heart of the Uintas and in the Wasatch Mountains extremely ancient crystalline rocks are found. The larger portion, however, of the rocks of these mountain masses is of much more recent date. The history of the development of the country from the early times to the present is long and complicated. Only a few of the more important chapters of that wonderful history can be given here. The great earth movements which have caused the uplifts which have already been described are recent events, obviously later in date than the formation of the stratified rocks which have been uplifted so many thousands of feet.

Long, long ago the area of the present state of Utah lay beneath a shallow sea which covered a large portion of the western United States. Into this great body of water the rivers carried detritus from the lands round about it, and from this river-borne material the strata now seen in the plateaus were formed. During the earlier period of uplift, where the Uinta and Wasatch mountains now stand, great lakes were formed. These lakes were partly filled by the work of the rivers, and were thus changed into swamps in which vegetation abounded. The remains of this vegetation is now seen in the coal deposits of the state. (Fig. 39.)

At a later period, elevation began anew and is still in progress. As the region slowly rose the rivers kept on cutting back into the rock masses, and thus were formed the great valleys later occupied by glaciers. Since the period of glaciation comparatively little erosion has been accomplished. (Fig. 8.) Yet the rivers are constantly and actively at work cutting deeply into the rising rock masses, and carrying away and

FIG. 10. *Conglomerate near Echo. This rock weathers so rapidly that little vegetation grows on its slopes.*

distributing the detritus furnished by the weathering and decay of the rocks. (Fig. 10.)

Soils. The soils of Utah are chiefly alluvial. In the river valleys and on the plain of the Great Basin wherever water is available the coarse or fine detritus which has been brought down by the rivers is devoted to agriculture. The soils formed directly by decay of the underlying rocks are found chiefly at high levels and are not used in agriculture.

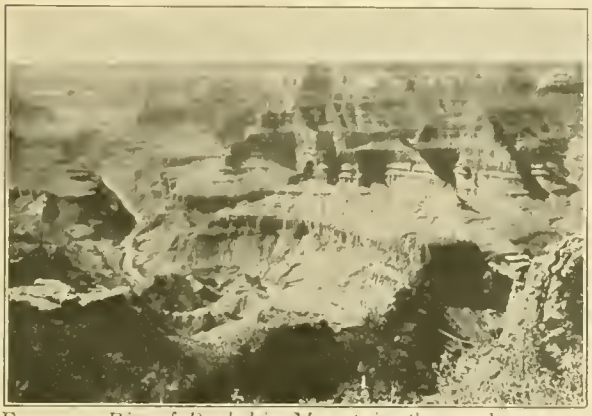

FIG. 11. *Rim of Buckskin Mountain, the roughest country in the world. The great irregularity of the uplift is the result of cutting and not of elevation.*

Drainage. With the exception of the northwestern portion of the state where the waters all flow northward to the Snake River, the rivers of Utah, like the surface, are divided into two groups. The plateau section of the state is drained by the Colorado and its tributaries. The Great Basin is a region of interior drainage; that is, its streams do not flow to either ocean, but the waters collect in the valleys and then sink into the ground or are evaporated. The Green River (Fig. 15) drains the northern portion of the plateau by means of its tributaries, Henrys Fork, Duchesne, White, Price, and San Rafael rivers. The Grand River (Fig. 13), which drains the west central portion of Colorado, flows into the Green and with it forms the Colorado. The Colorado, in the southeastern portion of the state, receives several tributaries from the west and one large tributary, the San Juan, from the east. Fremont or Dirty Devil River, Escalante River, Paria River, and Virgin River drain the high plateau of southern Utah, and the San Juan drains parts of New Mexico and Colorado. In certain places these streams have cut deep picturesque valleys, and along their courses are found the richest alluvial soils of the plateau section.

FIG. 13. *Grand River and La Sal Mountains. This isolated mountain group rising out of a desert plateau is of volcanic origin, with summits ranging between 11,800 and 13,000 feet in altitude.*

FIG. 12. *Bridal Veil Falls, Provo Canyon, in a region of great scenic beauty which annually attracts many visitors.*

The drainage of the Great Basin is interesting not only because the Basin is the greatest area of interior drainage in the United States, but because its present drainage differs so greatly from that of the remote past. The larger part of the Great Basin lying within the bounds of Utah

FIG. 14. *A view of Weber River near Peterson, Morgan County. In the distance may be seen Cottonwood Mountain.*

was once occupied by a great fresh-water lake that drained north to the Snake River. This lake covered an area of 19,760 square miles and in places was more than a thousand feet deep. It had a length of 346 miles; its greatest width was 145 miles; and its shore line approximately 2,550 miles. Winds beat the lake and formed great waves that dashed the waters against the shore. The action of waves and eddying currents along the shore line resulted in such peculiar beach forms and deposits as are now to be seen in process of development along the shore of any great lake or of the ocean. As the water dried away, these water-made forms were exposed to view. To-day these old shore lines plainly recorded high up on the mountain sides are, next to the mountains themselves, the most conspicuous features of the Basin area. At Provo and at Salt Lake City the old shore line is especially conspicuous and may be seen running along the sides of the hills as clearly now as when first revealed. Above the horizontal terraces may be seen the gullies and ridges due to the work of running water, while below the shore line all the land features are more or less horizontal.

FIG. 15. *A scene on Green River. This stream affords an inexhaustible supply of water for irrigation.*

This great lake, long since dried up, is known as Bonneville in honor of Captain Bonneville, who first visited this region in 1831, and who gave to the world the first account of this wonderfully interesting region.

During the existence of Lake Bonneville the climate was more humid or moist than it now is and abundant streams flowed down the mountain sides. The higher mountains were covered by glaciers, and a valley glacier extended down from the Wasatch Range in Little Cottonwood Canyon to the shores of the lake itself.

The rock waste or fine detritus washed into the lake settled to the bottom or floor of the lake and, as the waters dried away, a flat plain covered by rich alluvial soil was revealed. To the west the soil of the plain is so full of salts that it is barren and has been called the "Great

FIG. 16. *Lake Lucie, a glacial lake in Logan Canyon. As a result of the blocking of ancient valleys with glacial drift, Utah abounds in beautiful lakes.*

American Desert." In the east, where water is available for cultivation, this plain is a region unsurpassed in fertility. To-day in the lowest portions of the old lake floor are found the three lakes, Great Salt, Utah, and Sevier. Salts derived from the rocks of the land were dissolved in the great mass of water in Lake Bonneville. As evaporation reduced the old lake to the present smaller lakes, these salts have been left behind. Then as the waters decreased in amount they grew more and more salty. Hence the waters of the lowest of the present lakes, Sevier and Great Salt, are extremely salt.

FIG. 17. *The pavilion at Saltair, Great Salt Lake. The lake is widely known as a pleasure and health resort, and chief among the beautiful and attractive places along its shores is Saltair.*

While these lakes receive several small tributaries from the higher, moister regions about them, only a small number of the streams formed in the block mountains reach these bodies of water. The larger number of streams waste away or their waters are absorbed in the soils at the foot of the mountains, hence they disappear as streams.

Sevier River flows down from the central plateau section and, after cutting its way through the western ridge of the Wasatch Mountains, flows into Sevier Lake. The Provo River, the Weber River (Fig. 14), and the Bear River (Fig. 25) all rise in the western end of the Uintas and contribute the volume of their waters to Utah (Fig. 18) and Great Salt lakes. These lakes are connected by the Jordan River.

The valley of the Provo in the lower portion is renowned for its fertility, and that of the Weber forms the natural gateway for railroads (Fig. 52) through the Wasatch Range. The Bear River, rising in Utah, flows northward through a portion of Wyoming, then reënters the state in Rich County, but soon crosses again into Wyoming and Idaho before it finally returns to the state and makes its way to Great Salt Lake. It flows through Cache Valley, heretofore mentioned, and receives several important tributaries from the western spurs of the Wasatch Mountains. These mountain streams follow pathways having steep slopes and afford excellent water power, which is beginning to be utilized for the development of electricity.

Great Salt Lake. Great Salt Lake (Figs. 1 and 17) is the largest and most interesting body of salt water in the United States. With an area of 2,375 square miles and a depth varying from forty to seventy feet, it is one of the large lakes of the country. Its level varies constantly. Some years it is very low. As the amount of water decreases the percentage of salt increases,

FIG. 18. *On the shore of Utah Lake. It lies in one of the most beautiful and fruitful valleys in the state and is much frequented by sportsmen and pleasure seekers as a fishing, bathing, and boating resort.*

then when the lake fills up slightly, the water gradually becomes less salty. The percentage of salt in the water varies from 18 per cent to 25 per cent, constituting at times one-fourth the whole bulk. At all times the lake is too salt to sustain life in any species of fish. The density of the briny water is great enough to support the human body without effort, and makes bathing in the lake a great pleasure. Bathing in Great Salt Lake, which began with the arrival of the first band of settlers, has yearly attracted increasing numbers of visitors. Among the beautiful resorts that have been developed along its shore is Saltair (Fig. 17), visited each year by more than 200,000 people.

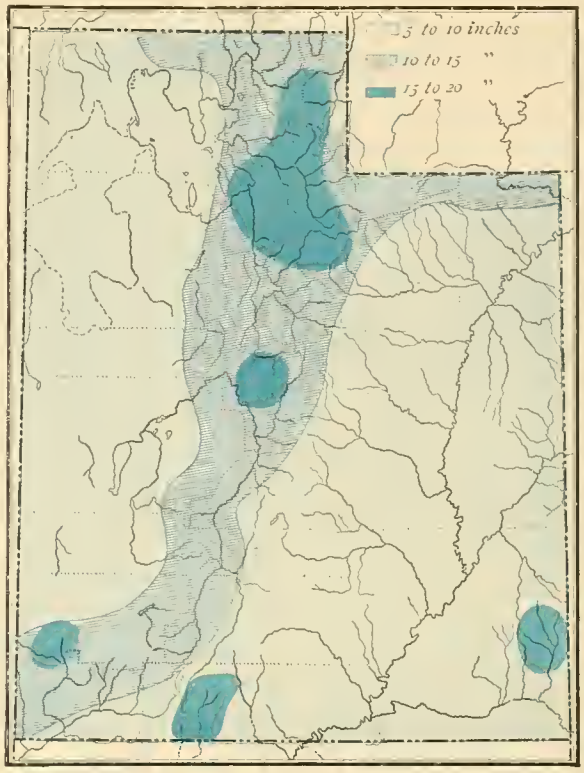

FIG. 19. *The mean annual rainfall of Utah.*

Climate. Owing to its position between two mountain ranges which act as barriers to moisture-bearing winds, the climate is exceedingly dry and the annual rainfall (Fig. 19) is not more than one-half as great as that of the more eastern Atlantic states. Variation, however, is wide. At Salt Lake City, within the region of heaviest rainfall, the yearly average is sixteen inches; in the extreme southwest it is less than seven inches (Figs. 20 and 21); the average for the whole state being about twelve inches. The range of altitude within the state is more than 10,000 feet, hence in a region with so great a range of relief it follows naturally that variations in temperature are correspondingly great. The mean temperature for January ranges from 24.1° at Snowville in the extreme north to 27.9° at Salt Lake City, and to 35.8° at St. George in the extreme southwest. In like manner the July averages range from 69.5° to 75.5° and 83.1°. (Fig. 22.) The rainfall is greater on the higher ranges, and in these regions snow accumulates to a great depth. Elsewhere the snowfall is light. In the north the winters are cold and severe, while in the south they are extremely mild. Because of the extreme dryness of the air, a large part of the rainfall is immediately evaporated, hence the soil is

FIG. 20. *The average annual rainfall at Salt Lake City and St. George.*

dry and in places extremely rich in salts. It is estimated that the amount of water evaporated from Great Salt Lake is not less than eighty inches annually. The climate of Utah is healthful and invigorating. It is highly favorable for agriculture, and wherever water is brought to the surface, either by rains or irrigation, crops grow luxuriantly.

Plants and Animals. The vegetation of Utah is varied, as is to be expected in a region having such a wide range of climate. It ranges from the plants characteristic of hot countries, found in the southern valleys, to those of the far north, growing in the higher mountain areas. Because of this great variation in climate the number of kinds of plants compared with the quantity is very great. The arid regions are sparsely covered with vegetation, but in places support a growth of sagebrush and other plants, some of which afford good winter forage for sheep. The hot region in the extreme southwest abounds in plants characteristic of that section. Of these the cacti, of which the yucca or Joshua tree (Elem. Geog., Fig. 186) is perhaps the most interesting, are the more numerous.

Forested areas are found in the higher regions, but the amount of merchantable timber is not large and the state does not produce enough lumber to supply the home demand. Hence lumber is an important article of import in Utah. A large part of the timbered area of the state is now included in the United States forest reserves. (Fig. 23.)

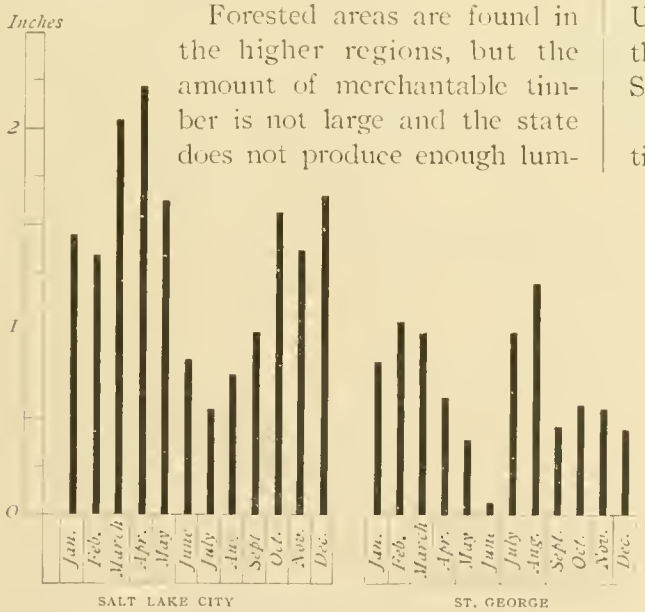

FIG. 21. *The average monthly rainfall at Salt Lake City and at St. George.*

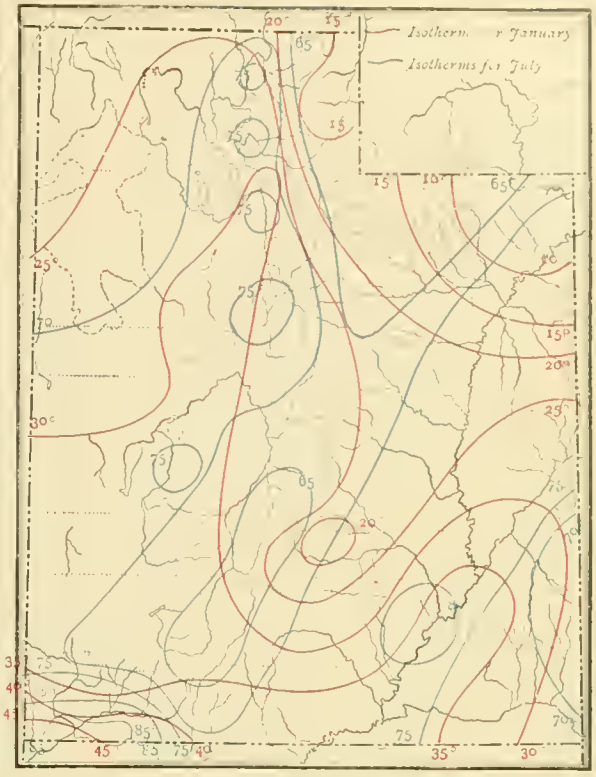

FIG. 22. *The mean temperature of Utah in January and July.*

Throughout the reserves the cutting of timber is restricted and grazing is controlled. Under these conditions the growth of underbrush is protected, and the forest resources are being so used as to insure a timber supply for future generations. A reckless use of the forest resources of a state means not only a lack of timber for future needs, but the deforested regions would shed the rain rapidly and the supply of water for irrigation would therefore be decreased seriously.

The valuable timber trees are the yellow and lodge-pole pine, the Douglas spruce, and the balsam fir. Many other trees, such as the juniper, piñon, and cottonwood,

are found in the ravines, on the tablelands, and along the ridges and principal streams. They are of use locally but are not important as timber trees.

Although there are many species of wild animals in Utah, owing to the small rainfall and scanty vegetation they are not found in great numbers. Antelope and deer exist in a few localities. The bear, coyote, lynx, beaver, and mountain lion are seen in many sections, and a small herd of bison is kept on Antelope Island in Great Salt Lake. The jack rabbit is so destructive to crops in Sanpete, Sevier, and several other counties as to be a great pest. Game birds abound in certain sections, affording game for sportsmen and hunters. Trout are abundant in all the mountain streams and the black bass has been introduced and is plentiful in Utah Lake.

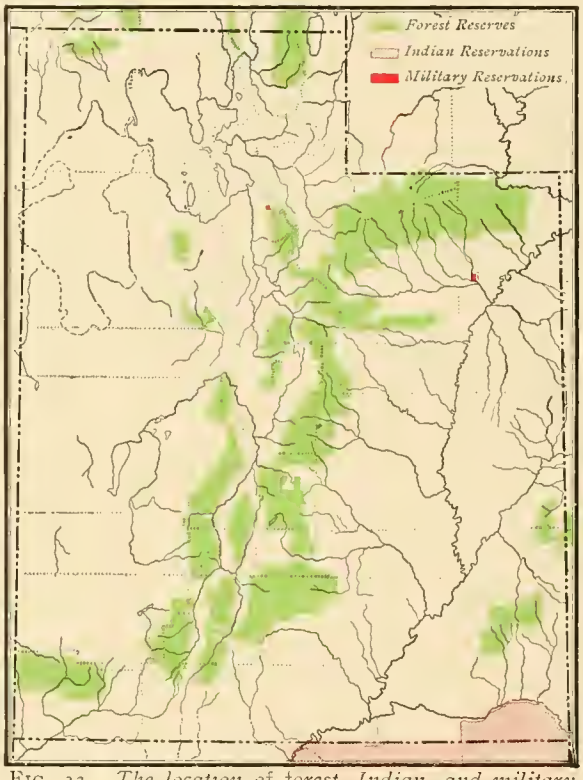

FIG. 23. *The location of forest, Indian, and military reservations, 1908.*

History. The first white men to enter the region which is now Utah were Spaniards sent by Coronado. Under the leadership of Càrdeñas they reached the Colorado River in 1540. In 1776 two Franciscan friars, Escalante and Dominguez, seeking a direct route to the Pacific, went from Santa Fé to Utah Lake. (Fig. 24.) About the year 1825 trappers came into the country, and later a few immigrants passed through on their way to California and the Oregon country. At this time the Indians were the only inhabitants of the region.

The real history of the state began in 1847, when a little band of Mormon exiles led by Brigham Young entered Salt Lake Valley. The Mormons had suffered much because of their religious beliefs. Therefore, in 1845, when the Fremont expedition made known and opened the way to this remote region, Young, who had long desired to remove with his followers to the Far West, resolved to migrate to the new country. Driven from their homes in Illinois and Missouri, the Mormons bravely started out on the long and toilsome journey in search of a place where they might build up new homes, and, unmolested, worship in their own way. Although the region to which they then migrated formed part of Mexico, the immigrants, loyal to the country they had left, unfurled on Ensign Peak the Stars and Stripes. (Fig. 24.)

As a result of the war with Mexico, in which the Mormons bravely bore a part, this territory, by the treaty of Guadalupe-Hidalgo in 1848, was ceded to the United States. No immediate provision being made by the United States for the government of the territory, the people set up a government under their church organization. In 1849, pending the action of Congress, the state of Deseret was organized, and admission to the Union was sought. Congress, however, refused to admit the state, but organized, September 9, 1850, the territory of Utah with Brigham Young as first governor.

Immigrants continued to come into the region until in 1852 it contained about 15,000 people. The people then began spreading out into the valleys north and south of Salt Lake City, and wherever water for irrigation could be easily diverted towns sprang up.

Repeated attempts were made to have Utah admitted to the Union as a state, but not until July 16, 1894, was an Enabling Act passed. This act, signed by President Cleveland, called for a constitutional convention, which met in Salt Lake City in the following March and framed the fundamental law upon which Utah, January 4, 1896, took her place among the states of the Union.

Industrial Growth. No sooner had the Mormons reached Salt Lake Valley than they began plowing the parched earth and making irrigating canals preparatory to planting a crop. From that time on agricultural pursuits (Fig. 29) have furnished employment for the main body of the people.

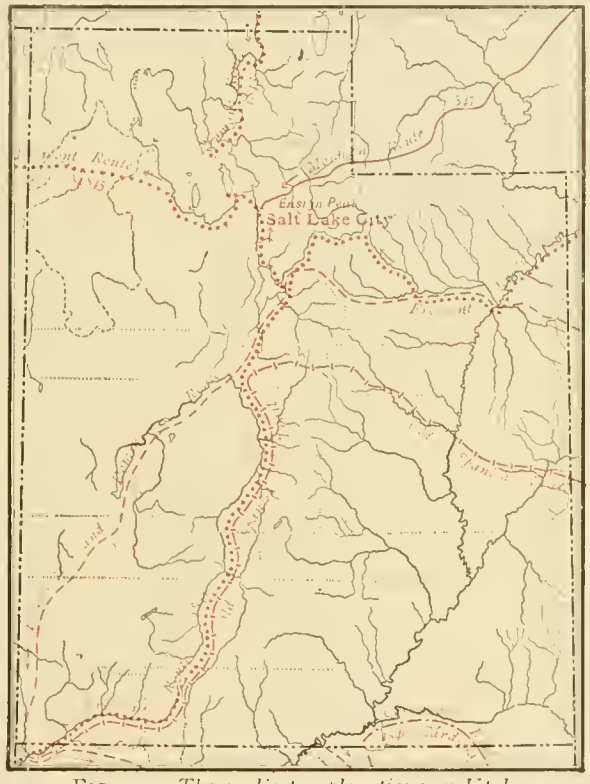

FIG. 24. *The earliest explorations in Utah.*

The rich deposits of ore in the mountains often tempted the early settlers to forsake the cultivation of the soil for the occupation of mining. This their far-sighted leaders always discouraged, rightly believing that a stable commonwealth could best be built up by spending their energies in developing the land. Even with this precaution the colonists had much privation to undergo in order to maintain themselves. Drouth, devastating insects, and Indian attacks repeatedly threatened destruction to the colony.

These colonists, thousands of miles from civilization, with poor transportation facilities, practically had to be self-supporting, therefore manufacturing and other industries were gradually developed. Good wagon roads, however, were built at an early day between Salt Lake City and all outlying settlements and were a most important factor in the early development of the territory.

Silver was discovered in 1857, and gold in 1864, in Bingham Canyon, where the first mine, the Old Jordan, was opened in 1863, and a little later mining became the occupation of increasing numbers of the people. The completion of the Union Pacific in 1869 gave Utah connection with the great markets of the country, and since that time the industrial and commercial growth of the state has been not only steady but rapid.

Irrigation. No other subject is of greater importance to the material growth and development of Utah than irrigation. The rainfall being insufficient to produce average crops, success in agriculture must depend largely upon irrigation, by means of which water is conveyed to the land to be cultivated by open ditches or canals. These canals, often miles in length, are constructed at great cost.

The first settlers, the Mormons, located as near as possible to streams, springs, or lakes, and from these by means of ditches led the

water to their fields. As new settlers came in these ditches were gradually extended. Hence it is seen that in America the Mormons were the pioneers in the modern practice of irrigation. The fact that the farmer must depend upon irrigation to raise his crops makes the water in any district of equal or

FIG. 25. *Bear River Canyon, along the Bear River irrigation canal. This important canal supplies water to many thousand acres of land.*

greater value than the soil. Before the water rights were decided by the courts the irrigation systems were in the hands of the local authorities, and usually an impartial as well as an economic distribution of the water was made. Irrigated farms were small and uniform in size, and disputes about water or the right to use it were rare. In some districts these early methods are still followed.

In recent years reservoirs have been built

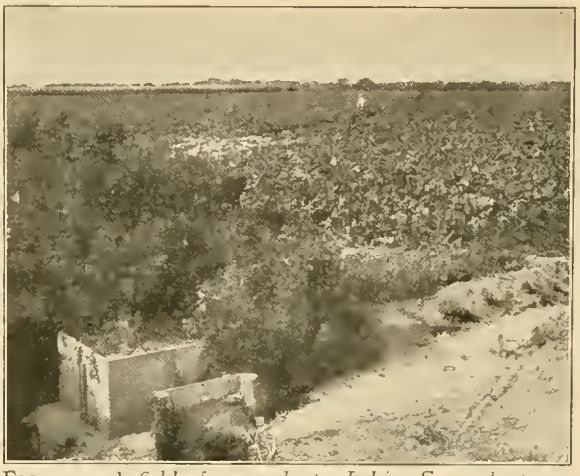

FIG. 27. *A field of sugar beets, Lehi. Sugar beets are always grown on irrigated land. The headgates seen in the foreground are used in regulating the flow of water into the field.*

in different parts of the state for storing the surplus water, and in this way the water supply available for irrigation has been greatly increased. The national government is constructing, at large expense, a great reservoir in Utah County, and is planning other important extensions. These works, when completed, will still further increase the water supply of the state. In 1902 the Utah canals irrigated nearly 715,000 acres of land. The area now being irrigated exceeds 1,000,000 acres, and there are more than 7,000 miles of irrigating canals. (Fig. 25.)

Agriculture. In Utah agriculture has always been the chief occupation of the people (Fig. 29), and, owing to the fine soils and favorable climate, and to the excellent opportunity for

FIG. 26. *A peach orchard in an irrigated district in Emery County. It lies in a valley traversed by the Green River, which affords an abundant water supply for irrigating wide tracts of rich agricultural lands.*

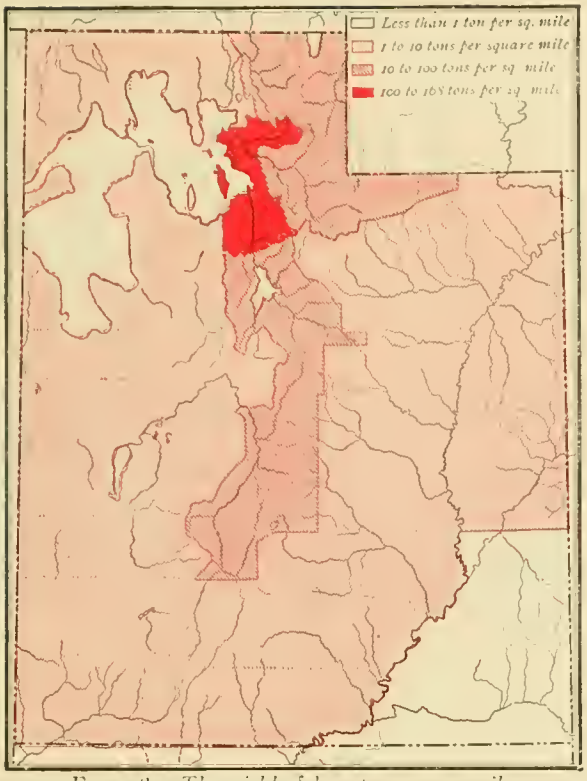

FIG. 28. *The yield of hay per square mile, state report, 1905.*

irrigation, it is a steadily growing industry. Only 3 per cent, however, of the area of the state as yet is devoted to farming. Probably the extremely dry regions where the soil contains much alkali will never be favorable for agriculture. In this state agriculture falls naturally into two general classes; that on

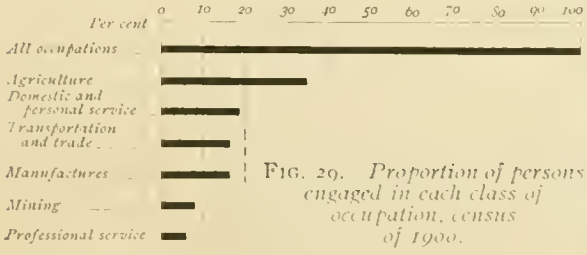

FIG. 29. *Proportion of persons engaged in each class of occupation, census of 1900.*

irrigated, and that on non-irrigated or arid land. Arid (Fig. 31), or dry farming as it is often called, is a comparatively new branch of the industry, but one rapidly growing in favor.

The growing of crops in the Great American Desert, as Utah was long called, without the artificial application of water was scarcely thought of before 1860, and dry farming can hardly be said to have been begun before 1880. In the early 90's dry farming without irrigation was established in the northern counties of the state. People of the southern counties, however, did not believe that it could be made profitable below Salt Lake City. But the practice was gradually extended south, and dry farming is now successfully carried on in nearly every part of Utah. It can not be applied to all Utah soils, but is successful chiefly on heavy clay and light sandy soils. Six experimental arid farms have been established by the state, and these are demonstrating what crops may be grown without the aid of irrigation. It is estimated that there are 23,000,000 acres of land in the state that can be profitably devoted to dry farming. In 1905 nearly 100,000 acres of arid land were planted to

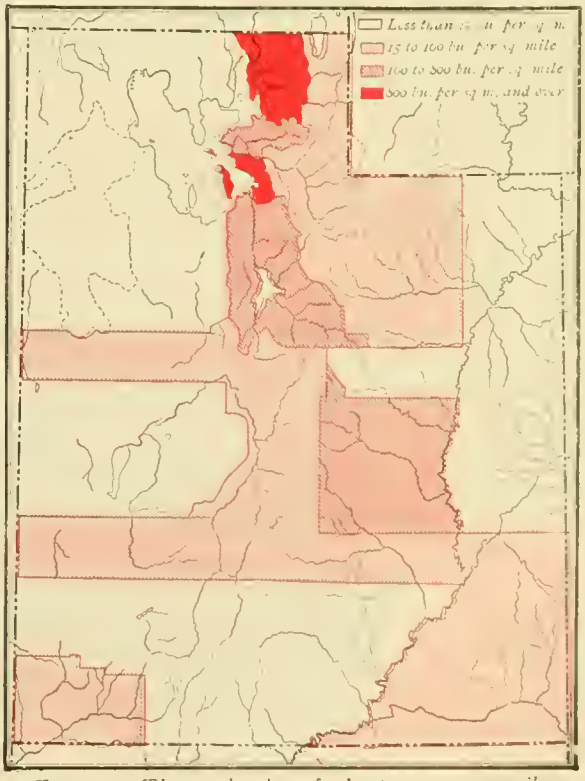

FIG. 30. *The production of wheat per square mile, state report, 1905.*

FIG. 31. *A view of the arid farming district at Nephi, showing the method of plowing.*

wheat, yielding about 1,500,000 bushels, or 15.3 bushels to the acre. In the future, probably, cereals, grasses, and similar crops will be raised largely on arid lands; while on the valuable irrigated farms such crops as sugar beets and fruit will be produced.

The principal agricultural crops in Utah are hay, chiefly lucern or alfalfa, wheat (Figs. 28, 30, and 32), oats, corn, barley, potatoes, and sugar beets (Figs. 27, 33, and 34), rye, fruits, and vegetables. Cotton thrives in the extreme southwest.

Horticulture. Both soil and climate invite the cultivation of fruits, and all varieties of temperate fruits thrive and yield abundantly. In the southern section of the state, in San Juan, Grand, and Washington counties, semi-tropical fruits, such as the fig, pomegranate, almond, and grape, grow luxuriantly. The growing of grapes especially is now well established, and raisins of superior quality form an important product.

FIG. 32. *A lucern field in an arid district in one of the central valleys. Profitable crops of lucern, wheat, and other farm products are now grown in many sections of the state without irrigation.*

Previous to 1890 little attention was given to the growing of fruit except for family use. Since that time, however, many commercial orchards have been established and thousands of trees are planted each year. Practically all the fruit produced in Utah is grown on

FIG. 33. *Thinning beets on a Utah Valley farm. The growing of sugar beets is one of the leading industries of the state.*

irrigated lands. (Figs. 26 and 35.) It has been demonstrated, however, that in some parts of the state certain varieties can be grown successfully on arid lands. Much of the fruit grown in Utah, which is unusual in size and excellent in quality, is sent to New York and other eastern markets, where it is held in high favor. In 1903 the value of the fruit crop was nearly $1,000,000.

Live Stock. Stock raising has always been an important feature in Utah agriculture. The early settlers found the mountain slopes covered abundantly with excellent grasses, while the scanty vegetation of the desert included grasses and shrubs which

also afforded nutritious food for stock. The original flocks and herds increased until to-day the cattle, sheep (Figs. 36, 37, and 38), and horses number many thousands. In 1907 the value of live stock in the state was $26,000,000. Of this sum $11,000,000, or nearly one-half of the total amount, represented the value of the sheep. Much attention is given to the breeding of fine sheep, and nowhere else do we find finer Merino and Cotswold sheep than we do in some parts of Utah. The wool produced by these sheep is remarkable for quality and weight, single fleeces sometimes weighing from forty to sixty-five pounds.

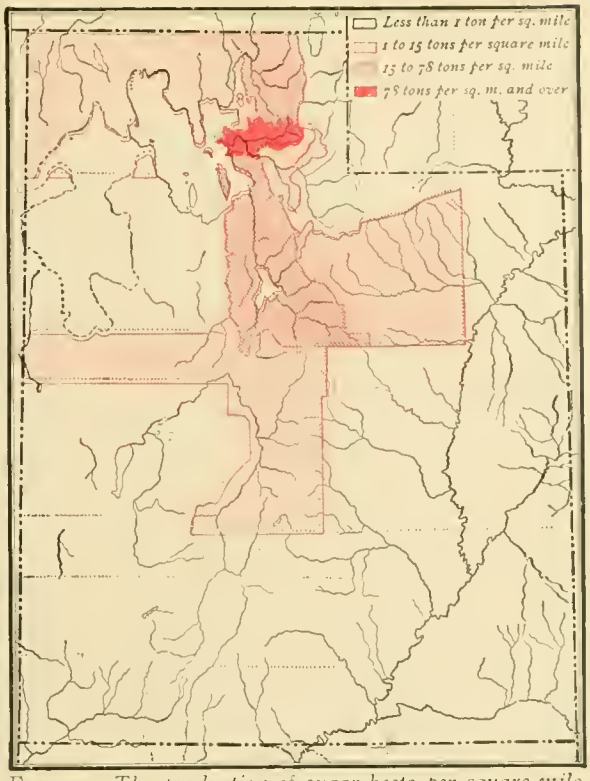

FIG. 34. *The production of sugar beets per square mile, state report of 1905.*

Cattle and milch cows rank next to sheep in importance. Dairying is confined to the fertile valleys of the irrigated districts. Horses form an important and growing item in the live-stock industry, their value nearly doubling between 1900 and 1905. In 1905 there were 973,343 chickens, 35,315 turkeys, 11,866 ducks, and 5,501 geese. In the same year the 21,397 stands of bees in the state produced more than 13,360,000 pounds of honey. The production is increasing rapidly, as Utah honey is widely known for its purity and flavor.

Sheep raising is by far the most important branch of the live-stock industry. This industry is largely confined to the grass regions of mountain and desert areas that are unsuited to agriculture. In summer the sheep are driven high up into the mountains, where they feed on the luxuriant grass made possible by winter snows and rains. As cold weather sets in they are driven to the western deserts, where throughout the winter they secure food from the scanty vegetation and water from the light snows. Since a large part of the area consists of mountain and desert lands which can never be profitable for agriculture, this branch of the live-stock industry will continue no doubt to flourish. The preservation of the forests in the National Forest Reserve and the regulation

FIG. 35. *A fruit orchard in Davis County. All the irrigated lands are being given over to the growing of fruits, sugar beets, and other more profitable crops, and to the exclusion of grain and alfalfa.*

of the number of animals that may graze on a certain area of land also tend to make the raising of sheep a much more permanent industry. This plan has already resulted in breaking up the vast herds common until lately throughout the state. Now we have smaller droves owned by many men instead of a few owners of countless herds. This leads to more home feeding and hence to improved stock. The cattle industry also depends in great part on the summer feed found in the mountains. Large numbers of cattle and sheep are also brought from the ranges in winter and fed on the farms. The production of wool, however,

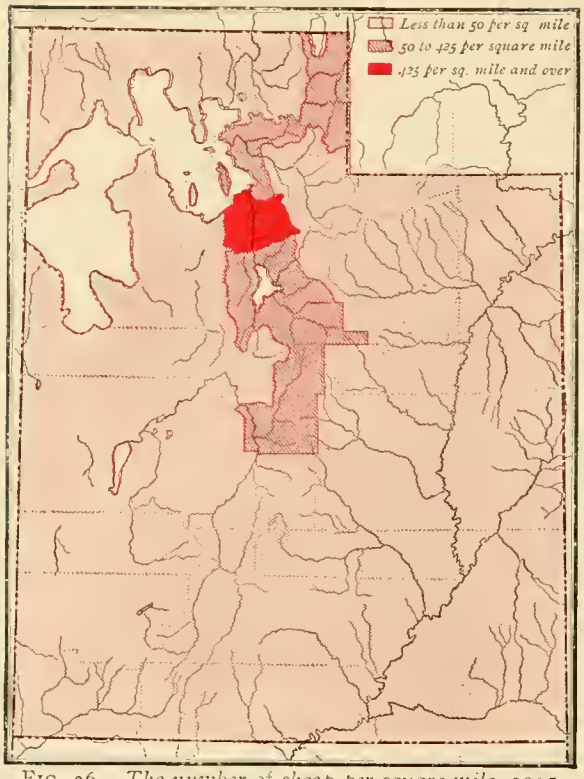

FIG. 36. *The number of sheep per square mile, 1905.*

FIG. 37. *A flock of sheep on the range. The raising of sheep for wool is the most important feature of the live-stock industry in Utah.*

remains the chief branch of the live-stock industry, Utah ranking seventh among wool-producing states. Like the growing of fruit, the live-stock industry is only in its infancy.

Minerals and Mining. By far the most important source of Utah's wealth is found in her enormous deposits of minerals. (Figs. 39 and 43.) While mining is the most important industry of the state, as yet only a small part of the available resources has been developed. The rocks of the Wasatch Mountains and those in the southern part of the state, covering an area of more than 2,000 square miles, contain workable deposits of excellent coal. (Fig. 39.) It is believed these deposits will, in the near future, furnish more coal than is needed for home use. Up to the present time, however, not enough coal is mined to meet the increasing demands of manufacturing. Hence a large amount of coal is brought in from other states. Coal was discovered at Coal Creek near Cedar City in 1851, yet coal mining (Fig. 40) in Utah has been largely a development

FIG. 38. *Cattle grazing in the Utah Valley.*

of the last twenty years. As the iron industry becomes more important annually the amount of coal used for making coke increases.

The mining of the precious metals, gold and silver (Fig. 43), increases constantly, and to-day Utah ranks third in the production of silver and sixth in gold. The first mining camp was opened in 1863 in the Bingham district. The leading mining regions to-day in the production of both gold and silver are the Bingham, Tintic, and Park City (Fig. 65) districts. These three areas are widely known for their rich and productive mines. (Figs. 41, 42, and 45.) The ores are extremely

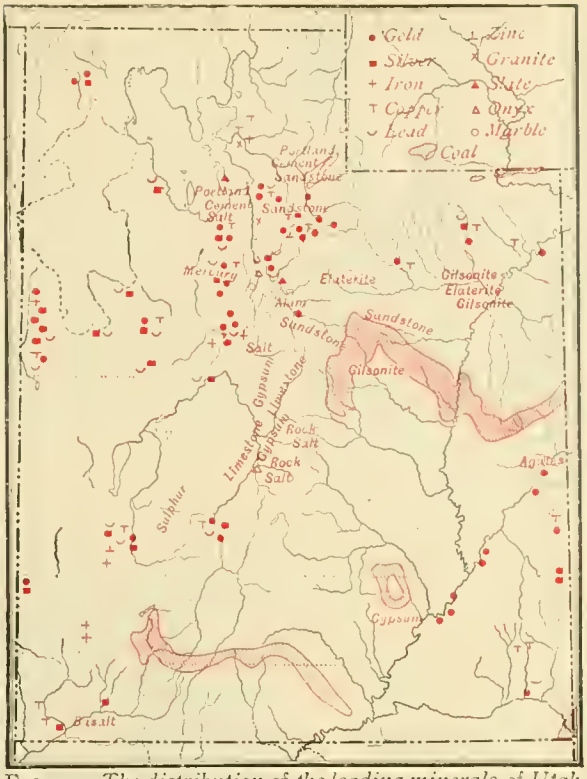

FIG. 39. *The distribution of the leading minerals of Utah.*

FIG. 40. *Coal mines and coke ovens, Castlegate. Coal from this field produces coke which, as an ideal fuel for industrial plants, bids fair to rival the celebrated Connellsville product.*

rich in copper and lead and in 1906 Utah was the third state in the Union in the production of lead and fourth in the yield of copper.

The most important mines are the Ontario, Silver King, and Daly West at Park City; Highland Boy and Old Jordan at Bingham; Bullion-Beck, Centennial, Eureka, and Grand Central in the Tintic District; the Hornsilver at Frisco, and the Consolidated at Mercur.

Smelters for separating the metals from the ores are located at Bingham Junction (Fig. 46), Murray, Garfield, Sandy, Milford, and Ogden. By far the larger part of the ores produced are smelted in the state.

High-grade iron ores, especially of magnetite and hematite, are found in Utah, the richest deposits being in Iron County, in the southern part of the state. As yet little iron is mined except in Millard, Juab, and Utah counties. The immense deposits of iron (Fig. 39), practically unworked, are, however, of

FIG. 41. *Head house, Galena mine, Bingham Canyon. Notice the aerial tramway for sending the ore below.*

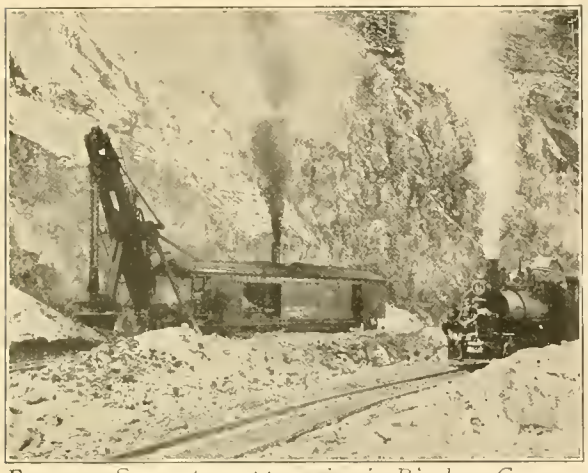

FIG. 42. *Scene at a copper mine in Bingham Canyon. Here may be seen the steam shovel used in this district for the shallow mining of copper ore.*

great value and, with the increased development of the state, the manufacture of iron is destined to become an important industry.

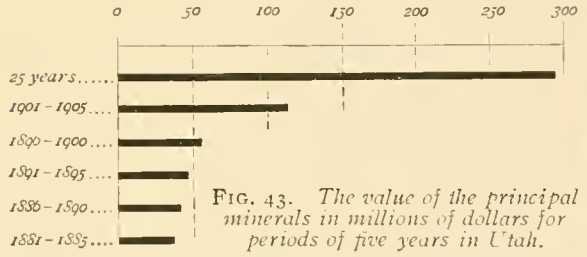

FIG. 43. *The value of the principal minerals in millions of dollars for periods of five years in Utah.*

Many deposits of the less common minerals are found in the state. (Fig. 39.) Asphalt is obtained from the minerals gilsonite and elaterite. They are mined so extensively in Uinta County that Utah ranks third in the Union in the production of asphalt. Many of the streets of Salt Lake City and Ogden are paved with asphalt manufactured in the state. The harder varieties of these minerals are used for making varnish. Extensive beds of gypsum are found in Sevier Valley, in Juab, Sanpete, and Sevier counties. Large quantities are mined and manufactured into plaster, which is an important product in Utah. There are large deposits of sulphur in Beaver and Millard counties, and salt occurs in the valley of the Sevier from Nephi to Salina. Salt also forms a very large portion of the solid matter of Great Salt Lake. (Fig. 48.)

FIG. 44. *A Portland cement factory in Weber Canyon. Each year the amount of cement used in Utah is more than doubled, and all is produced at home.*

FIG. 45. *A sampling mine in Bingham Canyon. Here the ore is concentrated, or separated from the rock, and only the richest shipped to the smelter.*

The state is rich also in building and ornamental stones as well as in cement-producing rocks. The cement industry is being extensively developed, and large plants for the manufacture of Portland cement are now in operation at Salt Lake City and in Weber Canyon. (Fig. 44.)

Granite from the Wasatch Mountains is quarried for local building purposes. The temple at Salt Lake City is built of this rock. (Fig. 64.) Sandstone is, however, more largely quarried for use in building than any other rock. The chief centers of sandstone production lie in the southern part of the

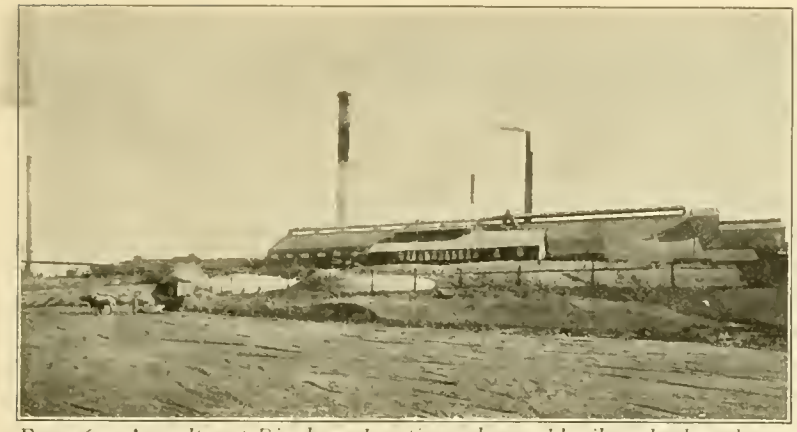

FIG. 46. *A smelter at Bingham Junction, where gold, silver, lead, and copper are separated from the ore. The smelting of ores is one of the largest industries in Utah, as it is in all the other Plateau States.*

state. Oölitic limestone, a rival of granite as an ornamental building stone, is found in Sanpete County and was used in building the temple at Manti.

Marble and Mexican onyx are also quarried to a limited extent for ornamental purposes, and the rich deposits of clay are just beginning to be used in the manufacture of brick and tile.

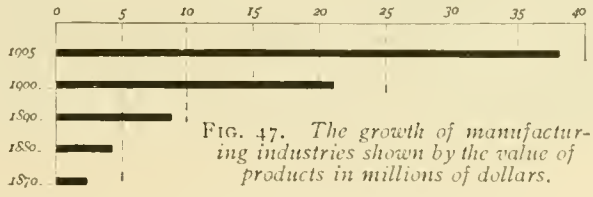

FIG. 47. *The growth of manufacturing industries shown by the value of products in millions of dollars.*

Manufactures. The location of Utah, between two mountain ranges and at a long distance from the great manufacturing centers of the country, makes transportation expensive. Naturally this adds greatly to the cost of manufactured products brought into the state. At the same time the state has an inexhaustible supply of coal, and the numerous falls and rapids in the streams afford abundant water power. These conditions, the great cost of imported products, and the abundant fuel and power at hand, naturally encourage home manufactures. In 1900 the value of the manufactured products exceeded $21,000,000, being nearly three times as great as in 1890. By 1906 the value of the products rose to nearly $39,000,000. (Fig. 47.) In the last named year the industrial works of the state gave employment to more than 8,000 persons, and engaged a capital of more than $26,000,000.

The immense deposits of iron in the southern part of the state, with a vast coal supply near at hand, make probable in the future great iron and steel works, which would give employment to many people and thus create increased demand for agricultural products.

At present the most important manufacturing industry is the smelting and refining of copper, silver, and gold ores. (Fig. 46.)

In the year 1905 copper smelting was the leading single industry of Utah. The manufacture of beet sugar (Fig. 50) is rapidly becoming a great industry. In 1908 there were six factories in operation. These are located at Ogden, Lehi, Logan, Garfield, Provo, and Lewiston. During the years 1906–1907 the combined product turned out by these factories was 80,848,000 pounds of sugar. This

FIG. 48. *Salt piles, Great Salt Lake. The water from the lake is conducted into ponds and evaporated, and the salt scraped into heaps. This forms one of the commercial industries of the state.*

FIG. 40. *Woolen mills at Provo. Established by Brigham Young in 1872, they were the first erected west of Chicago, and are now the largest woolen mills west of the Missouri River.*

product gave Utah fourth rank among the beet sugar-producing states of the Union.

Canneries, creameries, condensed milk factories, flouring mills, candy factories, lumber and planing mills, foundries, machine shops, tanneries, shoe factories, woolen mills (Fig. 49), and knitting factories are among the industrial institutions which convert the raw materials of the state into the finished products.

FIG. 50. *A sugar-beet crusher, Provo. In the foreground may be seen 7,000 tons of beet root awaiting the crusher. The juice will be pumped to the sugar refinery at Lehi, twenty-five miles away.*

Transportation and Trade. Owing to its position Utah is entirely dependent upon the railroads (Figs. 51 and 52) for the movement of its imports and exports. On May 10, 1869, the Union Pacific from the east and the Central Pacific from the west met at Promontory Point. For the first time Utah was in quick connection with the ports of the Pacific coast and the manufacturing regions of the Central and Eastern states. In 1870 a railroad was built from Ogden to Salt Lake City, and in 1883 the completion of the Denver & Rio Grande gave a second route to the east. Mining enterprises caused the building of many short lines connecting the mining towns with the larger cities. The latest railroad line extended across the state was the Salt Lake Route from Salt Lake City to Los Angeles. This road gives Utah a new outlet to the Pacific. The line runs through the southern section of the state and has opened up to agriculture and grazing large areas of hitherto unoccupied lands.

With competition the necessity for shorter routes was seen, and this resulted in the building of the famous cut-off across the northern end of the Great Salt Lake. This road, built on trestle (Fig. 51) over some places where the water is thirty feet deep, has shortened the route to San Francisco forty-three miles and has materially decreased the time of traveling from Salt Lake City or Ogden to the coast.

Over these various roads the agricultural, mining, and some of the manufactured products of the state, like sugar and cloth, are sent to the great markets of the country;

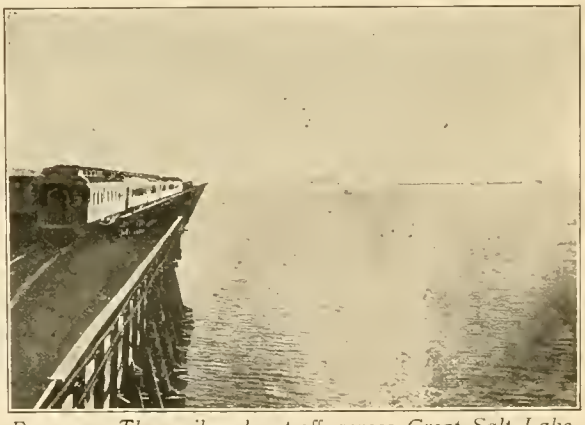

FIG. 51. *The railroad cut-off across Great Salt Lake. The lake is bridged by a single stretch of track fourteen miles long, built on piles driven into the sand beneath the water.*

while in exchange they bring to Utah machinery, clothing, furniture, and staple groceries. Owing to the great cost of transportation, however, the external trade of the state is small compared with that within the state. In 1870 there were only 257 miles of railroad lines in operation in Utah. By 1890 this mileage had increased to 1,265, and in 1908 amounted to about 2,000 miles.

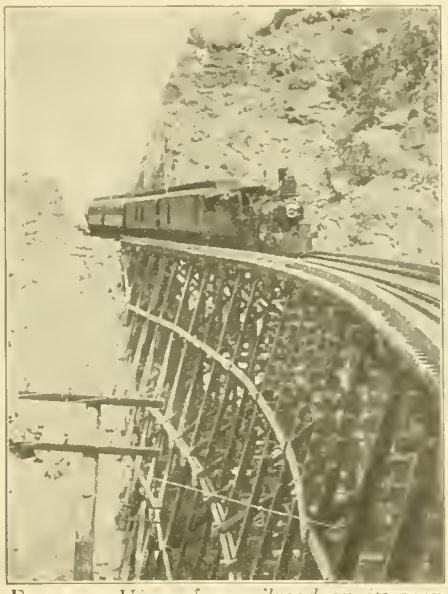

FIG. 52. *View of a railroad on its way through Weber Canyon.*

Government. The government of the state of Utah is divided into three separate and independent departments; the executive, the legislative, and the judicial.

The executive department of the state consists of a Governor, Secretary of State, State Auditor, State Treasurer, Attorney-general, and Superintendent of Public Instruction, each of whom holds his office for a term of four years, during which time he must reside at Salt Lake City, the seat of government. The Secretary of State or the President of the Senate succeeds to the governorship in case of vacancy, and serves until a new governor is elected at the next general election.

The Governor is commander-in-chief of the military forces of the state. He has power to veto any measure passed by the Legislature and thus prevent its becoming a law, unless it is afterwards ratified by a two-thirds vote of each house, when it becomes a law notwithstanding the veto of the Governor. The Governor, the Justice of the Supreme Court, and the Attorney-general constitute the Board of Pardons with power to grant pardons after conviction in all cases except for treason and sentences under impeachment.

The legislative or law-making power is composed of a Senate of eighteen members elected for four years, and a House of Representatives of forty-five members elected for two years. The state is divided into twelve senatorial and twenty-seven representative districts. The Legislature meets biennially in regular session in the city hall (Fig. 63) at the seat of government, Salt Lake City, and opens on the second Monday in January after the election of members of the House of Representatives. On extraordinary occasions the Governor may convene the Legislature in special session to transact business too urgent to await the regular session.

The judicial power of the state is vested in the Senate sitting as a court of impeachment, in a Supreme Court, in district courts, in justices of the peace, and other inferior courts. The Supreme Court of Utah consists of three judges elected by electors of the state at large for a period of six years. It must hold at least three terms each year in the capital city. The state is divided into seven judicial districts, the judges of which hold office for four years.

FIG. 53. *The Federal Building, Salt Lake City.*

The Legislature provides a uniform system of county government. Precinct and township organizations, the incorporation, organization, and classification of cities and towns are established and regulated by general laws. Women may vote and may hold office equally with men in this state. Utah has two senators and one representative in the National Congress.

FIG. 54. *View of the Agricultural College, Logan.*

State Institutions. The state institutions are educational, charitable, and penal. The educational institutions are the State University, situated at Salt Lake City (Fig. 55), the Agricultural College located at Logan (Fig. 54), and a school for the deaf and dumb and the blind at Ogden. An insane asylum is located at Provo, and there is an industrial or reform school at Ogden. The State Penitentiary is situated at Salt Lake City.

Education. The present school system was established in 1890. The state constitution and the laws provide for the maintenance of a public school system including all the grades from the kindergarten to the university. In Utah all cities with a population of 20,000 or more are known as cities of the first class; all cities with more than 5,000 and less than 20,000 are known as cities of the second class. The state is divided into school districts, and each city of the first or second class constitutes a school district; each county comprises one or more districts. The State Superintendent of Public Instruction has charge of the administration of the system of public instruction and a general oversight of the business relating to the district schools of the state. Associated with the State Superintendent in the work is the state Board of Education.

Each city of the first or second class has a board of education which has charge of the public schools of the city apart from the county. In each of the county districts a board of three trustees has charge of the local school affairs, and a county superintendent oversees the schools within the county. Schools of ordinary grades are maintained in the various districts, and kindergartens may be established wherever possible. High schools may also be established in the cities and counties.

There were, in 1906, 668 common schools in 338 districts of the state. Of this number 417 were graded and 251 mixed schools. There were thirty-four high schools. In these schools were employed 567 male and 1,325 female teachers governed by 47 superintendents and supervisors, and 1,000 members of school boards. In the same year

FIG. 55. *The State University, Salt Lake City.*

77,947 pupils were enrolled in the schools; 4,716 were promoted from the eighth grade, and 235 graduated from the high schools. The cost of the public schools for the year was $1,976,121.42, while the value of the school property amounted to more than $4,600,000. The public school system is supported by legislative appropriations, state and local taxation, and by the proceeds from sales of lands granted by the United States government for the purpose. Four sections of land in each township in the state are set aside for school support. This amounts to about 5,760,000 acres in Utah.

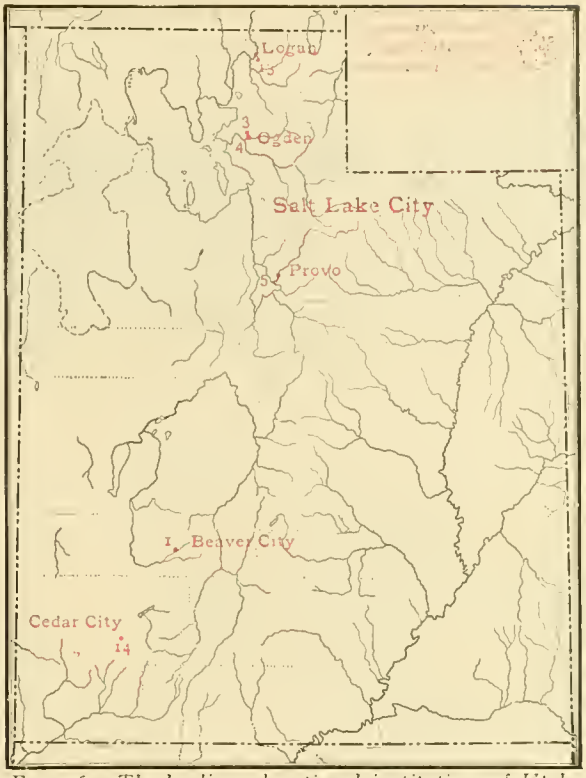

FIG. 56. *The leading educational institutions of Utah.*

The University of Utah (Fig. 55), situated at Salt Lake City, was founded as the University of Deseret in 1850. It comprises a preparatory school (of high school grade), the State Normal School, the State Normal Kindergarten, the State School of Mines, and a regular department for college training. The site of the University and allied schools is on sixty acres of land presented by the national government from the Fort Douglas Military reservation in Salt Lake City. A branch normal school is conducted at Cedar City, Iron County.

The Agricultural College (Fig. 54) is located at Logan in the beautiful Cache Valley one hundred miles north of Salt Lake City. Its courses comprise instruction and practical training in agriculture, commerce, and domestic and mechanic science and arts. This also is one of the state's chief educational institutions. It is designed to prepare students for practical life by emphasizing that side of their education. Agricultural experiment stations near St. George and Lehi in connection with the college are supported by the federal government.

The state school for the deaf and dumb and the blind, and a state industrial or reform school, are also maintained in Ogden. These are governed, like the University of Utah and the Agricultural College, by a board appointed by the Governor and approved by the Senate.

THE LEADING EDUCATIONAL INSTITUTIONS OF UTAH

COLLEGES AND UNIVERSITIES

1 Beaver Branch of Brigham Young University, L. D. S., Beaver City.
2 Brigham Young College, L. D. S., Logan.
3 Sacred Heart Academy, R. C., Ogden.
4 Weber Stake Academy, L. D. S., Ogden.
5 Brigham Young University, L. D. S., Provo.
6 All-Hallows College, R. C., Salt Lake City.
7 Latter Day Saints University, L. D. S., Salt Lake City.
8 Rowland Hall, P. E., Salt Lake City.
9 St. Mary's Academy, R. C., Salt Lake City
10 Salt Lake Collegiate Institute, Presb., Salt Lake City.
11 University of Utah, State, Salt Lake City.
12 Westminster College, Presb., Salt Lake City.

SCHOOL OF TECHNOLOGY

13 Agricultural College of Utah, Logan

PUBLIC NORMAL SCHOOLS

14 Branch Normal School, Cedar City.
15 State Normal School, Salt Lake City

Besides these schools supported by the state, there is a number of private and church schools maintained independent of state aid, some of which are doing excellent work. (Fig. 56.) Among the important ones are the Brigham Young University at Provo (the pioneer Mormon school in Utah, richly endowed by Brigham Young, its founder, and with a branch at Beaver), the Latter-Day Saints University (Fig. 57), Sheldon Jackson or Westminster College (a Presbyterian institution), All-Hallows College (Roman Catholic), Roland Hall (Episcopal school for girls), and St. Mary's Academy, all of Salt Lake City; the Brigham Young College, Logan; the Weber Stake Academy, and the Sacred Heart Academy, Ogden.

FIG. 57. *The Latter-Day Saints University at Salt Lake City.*

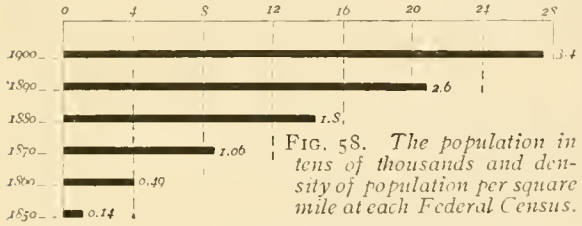

FIG. 58. *The population in tens of thousands and density of population per square mile at each Federal Census.*

The state makes liberal provision for the free education of all. Utah is among the first states of the Union in the amount per capita spent annually for education. Text-books are furnished free. Domestic and industrial work are receiving increasing attention. At several places there are domestic and physical laboratories of the most approved kind.

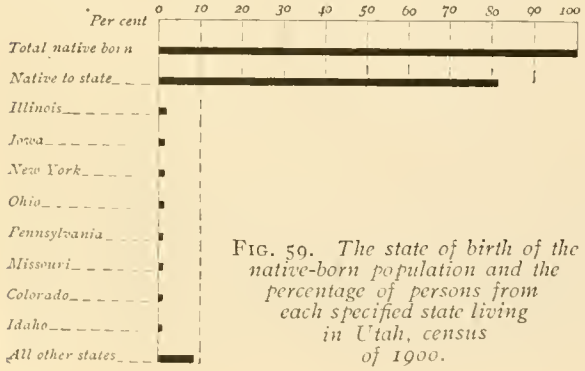

FIG. 59. *The state of birth of the native-born population and the percentage of persons from each specified state living in Utah, census of 1900.*

Population. Utah had, in 1900, a population of a little more than 275,000 people, or about three and four-tenths inhabitants to the square mile. (Fig. 58.) With this population it ranks forty-third among the states of the Union. Outside of the irrigated districts and the mining regions, in which are gathered the greater part of the people, the population of Utah is sparse. In fact, more than one-half of the state has less than two inhabitants to the square mile.

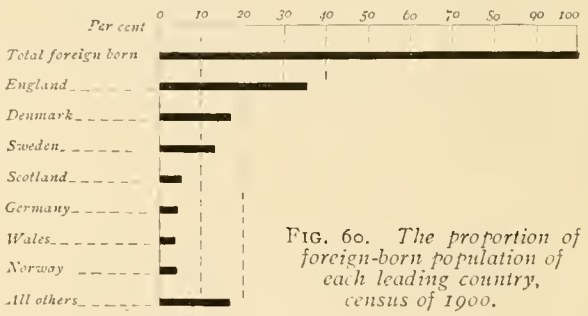

FIG. 60. *The proportion of foreign-born population of each leading country, census of 1900.*

Immigration, chiefly from foreign countries, is constantly increasing the population. In 1900 the foreign-born population was 53,777, or approximately one-fifth of all the inhabitants of the state. (Fig. 60.) English, Danes, Swedes, Scotch, and Germans are the most numerous of the European peoples that have migrated to Utah.

Of the native-born population (Fig. 59) more than four-fifths were born within the state.

II. GROWTH AND DEVELOPMENT OF CITIES AND TOWNS

Distribution of Cities and Towns. The population of Utah is not uniformly distributed over the state, but is chiefly grouped in a strip extending along the entire western base of the Wasatch Mountains. (Fig. 61.) This wide mountainous belt is cut by numerous valleys, and it followed naturally that exploration and settlement should be along these valleys.

While about one-third of Utah's population is gathered into incorporated places the number of its large cities is small, there being only four containing more than 8,000 people. The number of small towns is unusually large. This is due to the plan the first settlers, who were all farmers, followed of grouping their homes around a common center, in order to have the advantages of town life.

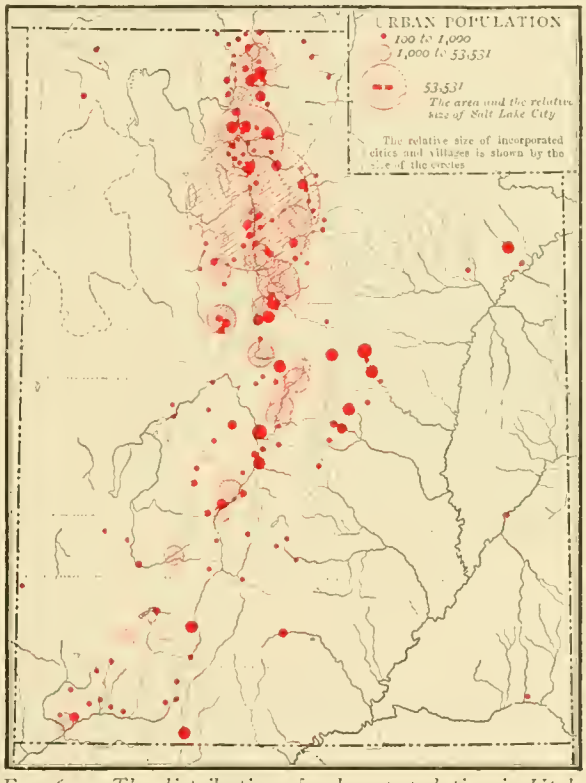
URBAN POPULATION
100 to 1,000
1,000 to 53,531
53,531
The area and the relative size of Salt Lake City
The relative size of incorporated cities and villages is shown by the size of the circles

FIG. 61. *The distribution of urban population in Utah, census of 1900.*

Salt Lake City and Neighboring Cities and Towns. *Salt Lake City* (Fig. 62), the capital of Utah and county seat of Salt Lake County, the chief city of the valley and of the state, is the most important city between Denver and the Pacific Coast. It is located on the Jordan River and is about twelve miles from the shore of Great Salt Lake. A few miles to the east of the city the abrupt face of the Wasatch Mountains rises more than a thousand feet above the valley, and a little farther to the west rises the Oquirrh Range, famous for its mineral wealth.

The city is the distributing center for a vast area important for mining and also for stock raising and farming, and its interests are chiefly commercial. As the headquarters for several large mining and smelting companies and mineral mills, it receives material gain from the rich mineral deposits of the near-by states of Nevada, Idaho, and Colorado in addition to those of Utah. The industrial establishments include car shops, breweries, candy factories, a cocoa factory, shoe factories foundries and machine shops, lime and cement works, saddlery and harness factories, a picture factory, tobacco, cigar, and cigarette shops, and lumber mills.

The city has an area of more than fifty square miles. It was planned on a grand scale, most of the blocks containing ten acres each. The streets are wide, regular, and very generally lined with shade trees, while a network of irrigation ditches covers the whole city. Most of the wards have a public square of nearly ten acres. Liberty Park (Fig. 62) contains one hundred ten acres. Salt Lake City has fine water and sewer systems, as well as an excellent street-car service.

There are ten banks, a clearing house, two stock exchanges, and several loan incorporations. The purchase of bullion amounts to more than $15,000,000 annually. There are also many flourishing mercantile establishments, the largest of which sells goods amounting in value to more than $4,500,000 annually. The city contains a number of handsome buildings; the most imposing being those erected by the Mormon Church. The great Temple (Fig. 64), built of fine white granite quarried in a mountain canyon a few miles south of the city, is ninety-nine feet wide and about one hundred sixty-six feet long. The main building is a little more than one hundred seven feet high with six

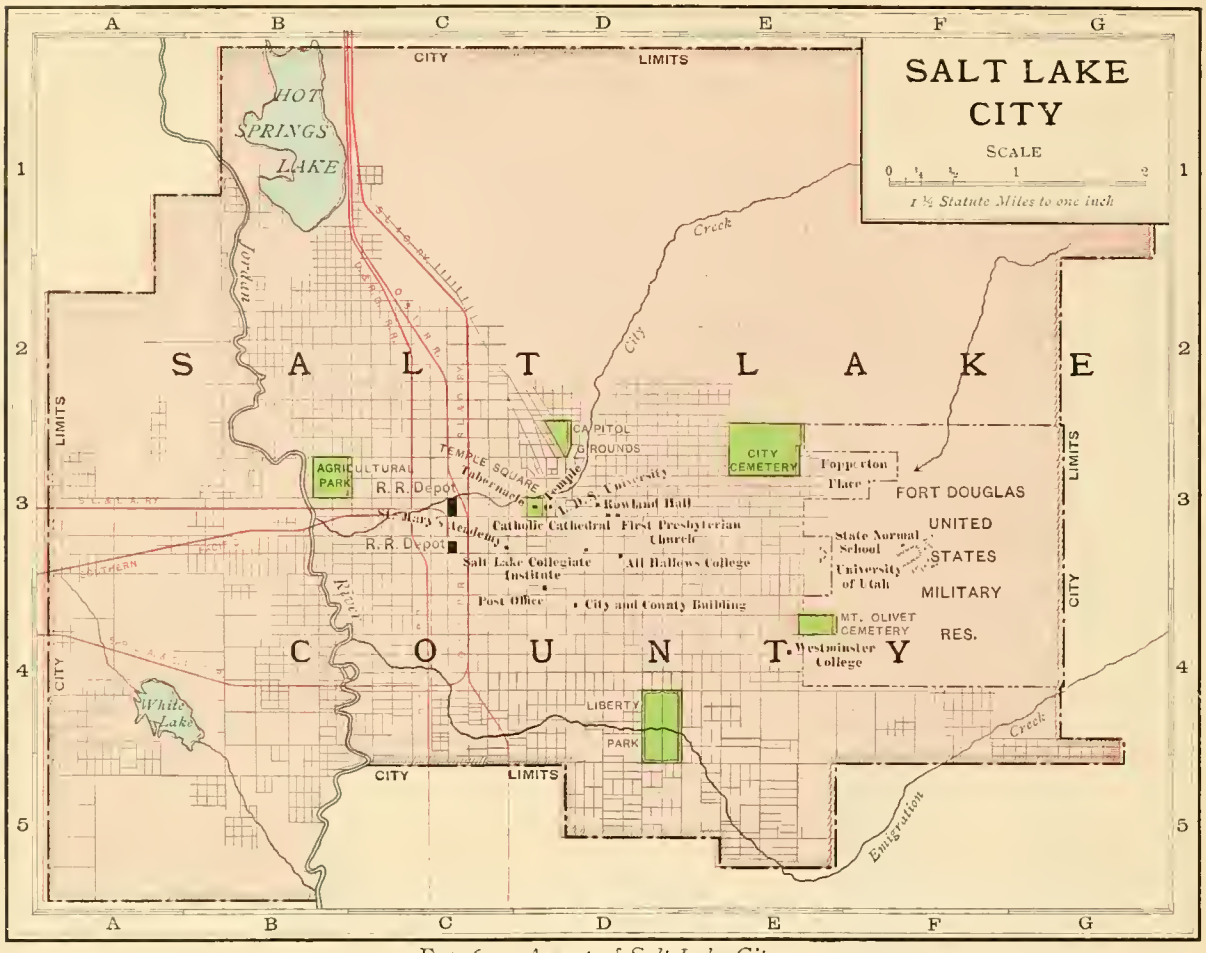

FIG. 62. *A map of Salt Lake City.*

towers, each rising more than fifty feet higher. The Tabernacle (Fig. 64), standing close by, is one story, its walls enclosing one room only, one hundred fifty feet wide by two hundred fifty feet long, and covered with a great arched roof. It will seat eight thousand people, and often twelve thousand people have been accommodated. It is especially noted for having one of the greatest and finest pipe organs in the world. The City and County building (Fig. 63) is occupied as the state capitol at the present time. Among other important buildings are the Catholic Cathedral, a magnificent structure now nearing completion, and the First Presbyterian Church, both on the same street as the Temple; the Salt Lake Theater, built in 1858; the Exposition building; the new Federal building (Fig. 53); the Latter-Day Saints', Holy Cross, and St. Mark's hospitals; and the University of Utah (Fig. 55). The city has two important libraries; one the public library, containing nearly fifteen thousand volumes, and the other the state law library with ten thousand volumes.

The city is well supplied with transportation facilities, half a dozen railroads either passing through the city or having their terminus there.

The government of the city consists of the mayor, a council of fifteen members, a treasurer, a recorder, an auditor, and two judges, elected for terms of two years. The appointive officers are: chief of police, fire chief, board of public works, water master, health officer, and building inspector.

Salt Lake City was founded July 24, 1847, the day the first Mormon emigrants reached the territory. Its increase in population has been

FIG. 63. *The City and County building, Salt Lake City.*

rapid. Thirteen years after its beginning, 1860, its population was 8,237; in 1870 it had a population of 12,854; in 1880, 20,768; in 1890, 44,843; in 1900, 53,531; and in 1907, 83,122, estimated from the school census.

Near by and to the south of Salt Lake City are *Murray*, *Sandy*, and *Bingham Junction* (Fig. 46), and twelve miles to the west *Garfield*, all busy towns with great smelters for the reduction of ores. Farther away, in the mountains to the east and to the southwest, are some of the richest mining districts of the state, and here we find a number of growing and important towns. Among these is *Park City* (Fig. 65), in the heart of the Wasatch, thirty miles east of and closely connected by two railroads with the capital. It is an important and prosperous city, the center of vast mining industries. To the southwest of Park City is *Alta*, a silver-mining camp and near

FIG. 64. *The Temple and Tabernacle, Salt Lake City.*

to large deposits of white granite, of which the great temple at Salt Lake City was built; and beyond that *Bingham Canyon* (Figs. 41, 42, and 43), a bustling mining town in the wonderful Bingham or West Mountain district.

In the fertile valley of the Jordan are found the flourishing towns of *Miller*, *Brinton*, *West Jordan*, *Draper*, and *Riverton*, trade centers for a rich agricultural region.

Beyond the Oquirrh Mountains, directly south of Great Salt Lake in Tooele County, lie *Tooele*, the county seat of the county, and *Grantsville*, both prosperous mining and agricultural towns.

Ogden and Other Cities and Towns of the Lake Shore Region. The chief city of this region is *Ogden* (Figs. 66 and 67), the county seat of

FIG. 65. *A general view of the Silver King Works at Park City. The city owes its prosperity largely to the adjacent mines, the Silver King being one of a number unusually rich in ore deposits.*

Weber County and the second city in size and importance in the state. It is beautifully situated on the Weber River at the base of Ogden Peak, thirty-seven miles north of Salt Lake City. Ogden's splendid transportation facilities have made it a great shipping and distributing point. Its manufacturing interests are also important and include smelting works, woolen and knitting mills, flouring mills, a sugar factory, brick and tile works, canning works, and many other industries. Ogden Canyon, opening at the city limits, is noted for its picturesque scenery and for its waterfall. This waterfall supplies one of the greatest power dams in the state, and furnishes light, heat, and power for Ogden and Salt Lake City, as well as for intermediate towns. The State Industrial School, the State Institu-

tion for the Deaf, Dumb, and Blind, the Sacred Heart Academy, and the Weber Stake Academy are all located here. In the vicinity are many fine health and summer resorts. Among these are the famous Utah Hot Springs; the waters being said to equal those of Arkansas or Carlsbad. Iron, coal, lime, and salt are obtained close by.

To the north of Ogden the principal towns are *North Ogden*, *Plain City*, *Willard* (Fig. 68), *Brigham*, and *Corinne;* to the south *Hooper*, *Layton*, *Kaysville*, *Farmington*, *Centerville*, *Bountiful*, and *Woods Cross*. These towns are trade centers for rich farming, fruit-growing, and dairying districts, and nearly all are located on main lines of railroad. Brigham, the most important of the group, is a busy place, having rolling and woolen mills and a cannery among its industrial plants. Layton is noted for its honey, and stock-raising and milling are among its industries. Kaysville has canning and other industries. Farmington has a large cannery, a good trade in honey, and is much frequented as a summer resort. Woods Cross has a large canning factory.

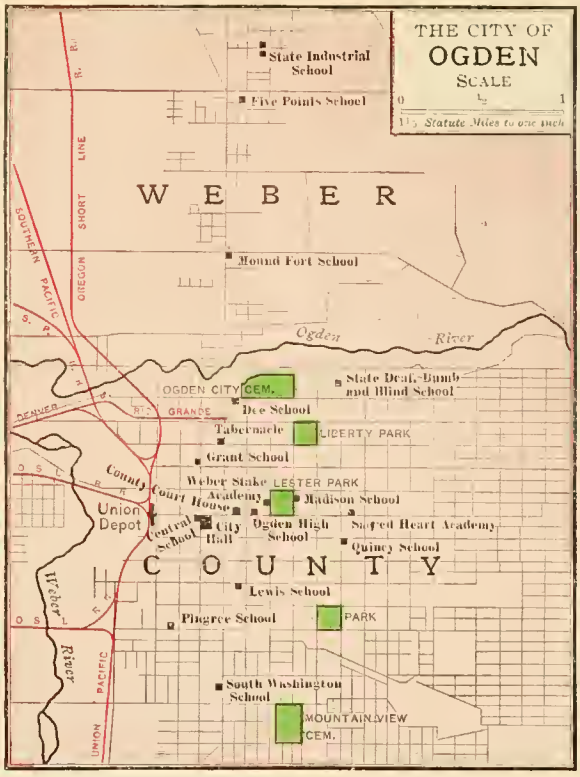

FIG. 66. *A map of the city of Ogden.*

Cities and Towns of the Cache Valley Region. *Logan*, the chief city of this fertile section, is the county seat of Cache County, and the third city in size in the state. It lies on the east side of Cache Valley, on the Logan River, and is an important trade and manufacturing center. Here we find sawmills, a beet-sugar factory, a brewery, knitting mills, canneries, a milk condensary, and other industrial plants. The city owns and operates the waterworks, and is lighted by electricity, the power for the plant being supplied by the Logan River. The surplus power of the electrical plant is transmitted to the mines in the Tintic district, 150 miles distant. The State Agricultural College, Brigham Young College, the New Jersey Academy, and a Mormon temple are located here.

North of Logan are *Smithfield*, *Richmond*, and *Lewiston*, and to the northwest *Clarkston*, trade centers in a productive farming and dairying country. There is a large beet-sugar factory at Lewiston, and a milk condensary at Richmond.

FIG. 67. *Washington Avenue, Ogden.*

To the south of Logan are *Providence*, with an excellent trade in small fruits, honey, and sugar beets; and *Hyrum*, a prosperous little city, having besides its fruit and farming interests, woolen mills and other industrial plants.

FIG. 68. *Scene in the Lake Shore Region near Willard.*

Wellsville, southwest of Logan, and directly west of Hyrum, has dairy and other interests.

Provo and the Neighboring Cities and Towns. *Provo* (Fig. 70), the county seat of Utah County, picturesquely situated on the Provo River between Utah Lake and the Wasatch Mountains, ranks fourth among the cities of the state in population. It is surrounded by a rich agricultural region and, has excellent transportation facilities; fruit is shipped from this point all over the country. A large electrical plant at the entrance to Provo Canyon supplies the city with light and power. Manufacturing (Fig. 49), merchandising, mining, fruit and stock raising, gardening, and dairying are among the occupations of the people. Provo is noted for its excellent educational advantages and has many fine homes. Here are located the Brigham Young University, the largest school in Utah, and Proctor Academy. In the neighboring mountains are several health and pleasure resorts. A few miles northeast of the city, in the picturesque Provo Canyon, are the beautiful "Bridal Veil Falls." (Fig. 12.) About twenty-five miles to the northeast of Provo, in the Provo Valley, are *Heber* and *Midway*, the most important places in a farming and stock-raising region. Near Heber are the noted "Hot Pots." To the northwest of Provo, and not far from the city, are the flourishing towns of *Pleasant Grove* and *American Fork*, and a little farther away, on Utah Lake, the beautiful city of *Lehi*, all thriving trade centers for honey, fruits, and farm products. Lehi is also a supply point for the great mining regions beyond, and is noted as having the largest beet sugar factory in the country. (Fig. 71.) Not far to the southwest of Lehi, in the Oquirrh Mountains, is *Mercur*, a mining town in the rich Camp Floyd district.

FIG. 70. *A street scene in Provo. This is one of the most delightful of Utah's cities.*

To the south of, and near Provo, we find the flourishing cities of *Springville* and *Spanish Fork*, both with thriving manufacturing industries; and still farther on, to the southwest, the growing railroad towns of *Payson*, *Santaquin*, *Goshen*, and *Mount Nebo*, market centers for excellent farming and stock-raising districts. A few miles southwest of Mount Nebo we come to the town of *Eureka* (Fig. 72), the busy industrial center of the great Tintic mining region.

FIG. 69. *Looking down into Logan from one of the upper benches, and showing how the desert may be transformed by irrigation.*

Other Cities and Towns of Utah. South of the Utah Valley the country is far less densely populated, and there we find few important cities and towns. Chief among the towns of this section, in a fine farming region, are *Nephi*, in Juab County, and *Fairview*, *Mt. Pleasant*, *Spring City*, *Moroni*, *Ephraim*, and *Manti*, in Sanpete County. At Manti we find the second largest Mormon temple in the state, built of the white sandstone found in the vicinity. The town has manufactories and two railroads; good coal is mined near by.

FIG. 71. *Beet-sugar factory at Lehi. This was the first sugar factory established in Utah.*

Southwestward from Manti, *Richfield*, in a mining and farming district, is the most important town in Sevier County, and the supply point for the Gold Mountain mining district. *Monroe*, a prosperous town in the same county, has fine mineral springs. *Marysvale*, to the southwest of that place, in Piute County, is the outlet for the Marysvale mining district; *Panguitch*, still farther south, in Garfield County, is the market and supply center for a farming and stock-raising region, as are also *Escalante* on the Escalante River in the central part of the same county, and *Kanab*, in Kane County.

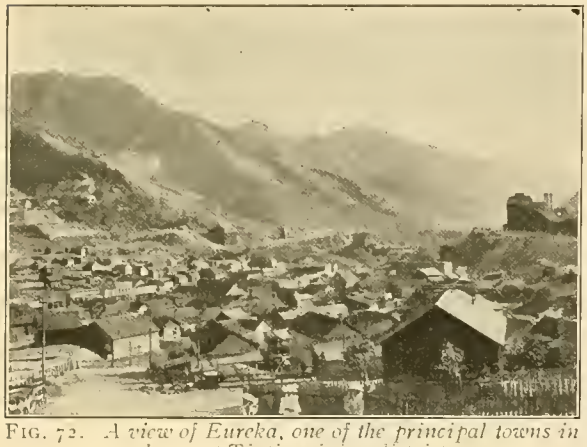

FIG. 72. *A view of Eureka, one of the principal towns in the great Tintic mining district.*

St. George, in the extreme southwestern corner of the state, the county seat of Washington County, is the chief town of that section. Northeast of that place are *Cedar City*, the seat of the Branch State Normal School, and *Parowan*, large towns in Iron County; while *Beaver City*, farther to the north in Beaver County, is an important little city with an academy. Beyond Beaver City lies *Fillmore City*, the county seat of Millard County, once the capital of the state and now the trade center of a thriving farming country.

In the eastern part of the state important settlements are few in number. Here we find *Coalville*, in a farming, stock-raising, and coal-mining district in Summit County; *Vernal*, a trade and market center in Uinta County; *Price* and *Castlegate*, with large mining industries (Figs. 40 and 73), in Carbon County; *Moab* in Grand, and *Ferron* and *Huntington* in Emery counties.

FIG. 73. *Castlegate, the majestic gateway to Price River Canyon. The town near by derives its name from the gigantic pillars that guard this entrance.*

III. STATISTICS AND AIDS TO TEACHERS.

Statistics of the State of Utah by Counties, from the Federal Census of 1900 and State Estimates for 1908.

COUNTY	ORGANIZATION	AREA	POPULATION 1908	POPULATION 1900	FARM PROPERTY INCLUDING LIVE STOCK	FARM PRODUCTS	MANUFACTURES	COUNTY SEAT	POPULATION 1908	POPULATION 1900
Beaver	1866	2,580	4,350	3,613	$ 917,668	$ 165,124	$ 70,741	Beaver City	2 500	1,701
Boxelder	1866	5,436	11,000	10,000	4,420,116	710,894	192,432	Brigham	3,200	2,859
Cache	1866	1,181	21,500	18,139	6,347,095	1,083,140	676,370	Logan	9 250	5,451
Carbon	1894	1,596	6,200	5,004	459,201	94,488	199,128	Price	1,100	539
Davis	1866	285	7,200	7,996	4,815,819	905,646	251,217	Farmington	1,200	968
Emery	1880	4,336	5,100	4,657	1,272,268	228,309	61,171	Castle Dale	800	559
Garfield	1882	5,103	4,150	3,400	919,604	203,829	56,214	Panguitch	1,200	883
Grand	1890	3,759	1,150	1,149	715,659	134,016	4,398	Moab	500	276
Iron	1866	3,284	3,645	3,546	611,606	167,136	31,610	Parowan	1,200	1,039
Juab	1866	3,300	11,285	10,082	1,591,069	315,116	216,701	Nephi	3,000	2,208
Kane	1866	4,368	1,900	1,811	706,767	152,436	16,551	Kanab	750	710
Millard	1866	6,664	5,678	5,678	2,534,144	423,922	57,161	Fillmore City	1,000	1,037
Morgan	1866	599	2,000	2,045	914,556	166,711	33,110	Morgan	500	600
Piute	1866	744	2,000	1,954	559,275	118,998	.....	Junction	250	249
Rich	1866	1,050	1,025	1,046	2,392,363	468,521	35,314	Randolph	800	821
Salt Lake	1866	768	140,000	77,725	11,111,684	1,768,431	14,212,689	Salt Lake City	83 100	53,531
San Juan	1880	8,025	1,023	1,023	518,716	136,143	.....	Monticello	175	180
Sanpete	1866	1,561	17,500	16,313	6,624,738	1,090,253	337,958	Manti	3,000	2,408
Sevier	1866	1,880	9,200	8,451	2,607,218	482,747	168,576	Richfield	2,500	1,969
Summit	1866	1,937	10,600	9,439	2,592,580	447,519	129,467	Coalville	1,200	808
Tooele	1866	6,901	7,361	7,361	2,149,962	424,388	111,910	Tooele	1,200	1,200
Uinta	1880	5,190	7,500	6,458	2,044,355	381,300	101,611	Vernal	1,200	664
Utah	1866	2,123	37,000	32,456	8,888,009	1,725,130	1,654,817	Provo	7,500	6,185
Wasatch	1866	4,147	5,001	4,736	1,625,106	275,147	63,775	Heber	2,000	1,534
Washington	1866	2,457	5,070	4,612	1,088,000	233,142	39,148	St. George	1,700	1,600
Wayne	1892	2,372	2,000	1,907	541,479	122,172	17,435	Loa	550	443
Weber	1866	544	43,000	25,239	5,231,094	1,070,920	2,421,679	Ogden	36,000	16,313
Uinta Valley and Uncompahgre Ind. Res.	....	..	.....	.....	963,230	47,065	. ....	. .. .	.. .	. ..

Population of the Leading Cities and Towns of Utah at each Federal Census from 1860 to 1900, and State Estimates for 1908.

CITIES AND TOWNS	1908	1900	1890	1880	1870	1860
Salt Lake City	83,100	53,531	44,843	20,768	12,854	8,207
Ogden	30,000	16,313	14,889	6,069	3,127	1,463
Logan	9,200	5,451	4,565	3,396	1,757	....
Provo	7,500	6,185	5,159	3,432	2,384	2,591
Springville	3,800	3,422	2,849	2,312	1,661	....
Eureka	3,500	3,085	1,733	122	.....	....
Spanish Fork	3,300	2,735	2,214	2,304	1,450	769
Park City	3,200	3,759	2 850	1,542	.....	....
Brigham	3,200	2,859	2,139	1,877	1,315	975
Payson	3,200	2,636	2,135	1,788	1,436	830
Mt. Pleasant	3,200	2,372	2,254	2,004	1,346	746
American Fork	3,000	2,732	.....	1,290	.....	....
Lehi	3,000	2,719	.....	1,490	.....	....
Manti	3,000	2,408	1,950	1,748	1,239	913
Nephi	3,000	2,208	2,034	1,797	1,286	972
Murray	3,000	.....	.....	....	.....	....
Pleasant Grove	2,900	2,460	1,926	1,775	930	....
Ephraim	2,500	2,086	.....	1,698	1,167	....
Richfield	2,500	1,969	1,531	1,107	.....	....
Beaver City	2,500	1,701	.....	1,732	1,207	785
Bountiful	2,500	1,442	.....	1,076	1,517	....
Hyrum	2,000	1,652	.....	1,234	708	....
Heber	2,000	1,534	1,538	1,291	658	....
Bingham Canyon	2,000	....	....	.....	.....	....
Garfield	2,000	....	.....	....	.....	....
St. George	1,700	1,600	.....	1,332	.....	....
Cedar City	1,700	1,425	967	691	.....	....
Kaysville	1,650	1,708	548	1,187	.....	....
Smithfield	1,600	1,494	1,080	1,177	744	....
Spring City	1,500	1,135	1,044	989	623	....
Miller	1,500	.....	.....	....	.....	....
West Jordan	1,500	.....	.....	.....	.....	....
Moroni	1,300	1,224	958	838	633	....
Hooper	1,300	....	.....	....	.....	....
Lewiston	1,300	.....	.....	.....	.....	....
North Ogden	1,300	.....	.....	.....	.....	....
Fairview	1,300	1,119	844	863	531	....
Coalville	1,200	1,252	.....	.....	.....	....
Tooele	1,200	1,200	.....	918	.....	....
Parowan	1,200	1,039	.....	957	861	....
Farmington	1,200	968	.....	1,073	976	....
Panguitch	1,200	883	.....	.....	.....	....
Providence	1,200	877	.....	.....	.....	....

Population of the Leading Cities and Towns *Continued.*

CITIES AND TOWNS	1908	1900	1890	1880	1870	1860
Vernal	1,200	664	....	...	...	....
Price	1,100	539	209	...	...	....
Grantsville	1,000	1,058	.....	1,007	.....	....
Monroe	1,000	1,057	880	...	.....	....
Fillmore City	1,000	1,037	.....	987	905	....
Sandy	1,000	1,030	.....	99	.....	....
Wellsville	1,000	908	.....	1,193	885	....
Salem	1,000	847	.....	.....	.....	....
Santaquin	1,000	889	.....	.....	.....	....

Population of Utah at Each Federal Census from 1850 to 1900.

YEARS	RANK OF STATE	TOTAL POPULATION	INCREASE IN TEN YEARS	PER CENT OF INCREASE	DENSITY PER SQ. MILE
1850	35	11,380	.....	.....	0.1
1860	37	40,273	28,893	253 9	0.2
1870	39	86,786	46,513	115.5	1.1
1880	30	143,963	57,177	65 9	1.8
1890	40	207,905	63,942	44 4	2 6
1900	43	276,749	67,047	32 2	3 4

State or Country of Birth of Population of Utah, 1900.

STATE	NUMBER	COUNTRY	NUMBER
Native to state	181,886	England	18,879
Illinois	3,870	Denmark	9,132
Iowa	3,035	Sweden	7,025
New York	3,032	Scotland	3,143
Ohio	2,525	Germany	2,360
Pennsylvania	2,519	Wales	2,141
Missouri	2,298	Norway	2,128
Colorado	2,131	Ireland	1,816
Idaho	1,805	Switzerland	1,469
Nebraska	1,432	Canada	1,331
Indiana	1,340	Italy	1,062
Wyoming	1,240	Finland	734
California	1,151	China	544
All other states and territories	14,708	Other countries	2,313
Total native born	222,972	Total foreign born	53,777

Total Production of Principal Minerals from January, 1880, to December 31, 1905.

YEARS	GOLD	SILVER	LEAD	COPPER	AGGREGATE
1880	$ 165,773	$ 4,020,501	$ 786,005	$	$ 4,981,330
1881	144,317	5,503,762	1,101,050	.....	6,740,129
1882	186,836	6,114,874	1,771,780	75,735	8,149,231
1883	144,503	4,084,939	1,747,326	....	6,876,768
1884	114,305	6,123,047	1,149,852	6,337	7,393,541
1885	184,025	6,211,506	1,222,172	.....	7,617,703
1886	218,026	5,860,837	1,414,808	144,453	7,638,814
1887	235,360	5,976,884	1,308,538	124,566	7,645,357
1888	387,023	5,787,527	1,203,313	288,681	7,566,544
1889	510,233	6,650,249	1,468,246	200,079	8,846,807
1890	609,700	8,492,200	2,098,766	70,536	11,367,211
1891	747,427	8,750,206	2,057,405	100,083	12,265,111
1892	780,221	7,702,388	2,505,720	91,130	11,178,450
1893	1,117,668	5,233,065	1,542,135	60,060	7,962,828
1894	1,106,346	4,103,074	895,124	53,308	6,308,452
1895	1,352,100	5,360,032	1,486,427	151,532	8,356,181
1896	1,040,830	5,843,868	1,358,456	267,139	9,410,293
1897	1,663,252	4,522,058	1,818,607	313,077	8,317,594
1898	2,108,283	4,403,854	2,348,098	420,091	9,347,826
1899	3,581,408	4,612,351	2,701,869	1,246,000	12,141,628
1900	4,203,414	6,248,610	3,122,803	2,514,507	16,140,484
1901	3,945,303	6,801,816	3,210,967	3,750,247	17,708,333
1902	4,007,180	7,915,338	5,314,098	3,154,520	20,391,145
1903	4,904,660	10,486,681	4,708,920	4,450,152	24,553,422
1904	5,688,714	7,404,715	5,169,291	6,370,132	24,731,862
1905	5,140,787	6,648,200	4,897 532	9,329,600	26,025,119

Coal Mined in Principal Coal-bearing Counties, State Bureau of Statistics.

COUNTY	1902	1903	1904	1905
Carbon	1,526,387	1,506,027	1,416,623	1,444,505
Summit	49,841	64,411	61,320	74,000
Sanpete	7,001	10,450	7,733	4,202
Emery	1,700	13,200	1,290	3,500
Uinta	.....	10,300	.....	10,000
Iron	.....	1,000	.....	.....
Other small mines	53,000	64,750	3,520	63,550

Value of Live Stock in Utah, Federal Census of 1900 and State Bureau of Statistics, 1907 (Estimated).

LIVE STOCK	RANK OF STATE	1900	1907 (ESTIMATED)
All domestic animals	30	$28,175,867	$29,344,376
Sheep	5	10,256,488	7,800,000
Cattle	42	7,152,844	9,322,176
Horses and mules	42	3,455,163	6,447,320
Hogs	42	203,115	524,880
Poultry	45	262,503	600,000
Bees	27	111,452	350,000

Value of Agricultural Products of Utah, Federal Census of 1900 and State Bureau of Statistics, 1907.

CROPS	RANK OF STATE	1900	1907 (ESTIMATED)
All crops	44	$8,229,660	$17,193,872
All cereals	30	2,386,789	.....
All vegetables	42	1,250,713	.....
All fruits	34	308,323	.....
Hay and forage	34	3,862,820	8,603,252
Wheat	28	1,575,064	3,557,943
Oats	35	553,847	1,657,052
Corn	44	121,872	231,660
Barley	22	121,826	315,632
Potatoes	34	487,810	987,210
Sugar beets	3	365,782	2,160,000
Clover seed	9	127,001	.....
Nursery and orchard products	..	385,873	941,500
Small fruits and grapes	32	145,225	184,000
Wool	4	2,590,638	4,300,000
Dairy products	41	1,522,032	.....
Eggs	45	424,628	.....
Honey and wax	26	94,364	350,000
Sorghum	24	12,093	.....
Vegetables (Misc.)	42	362,782	470,067

Some Farm Statistics of Utah, State Census, 1905.

COUNTY	NUMBER FARMS	TOTAL ACREAGE	AVERAGE SIZE (ACRES)	UNDER FENCE	UNDER CULTIVATION
Beaver	374	24,283	64 9	21,013	11,030
Boxelder	1,222	164,893	134 9	138,240	61,073
Cache	1,741	249,655	143.3	206,077	105,956
Carbon	240	25,522	106.3	19,095	6,554
Davis	807	72,734	81 0	66,128	35,357
Emery	568	52,580	92.7	31,660	18,580
Garfield	415	37,382	90.1	26,413	9,502
Grand	120	16,744	139 5	8,614	3,579
Iron	382	17,148	44 9	13,020	8,243
Juab	512	38,417	75.0	30,134	13,571
Kane	161	14,852	89 8	13,817	5,090
Millard	478	53,783	112 5	50,113	19,333
Morgan	287	24,113	84 0	19,312	7,739
Piute	213	25,167	108 9	21,120	8,691
Rich	308	128,728	417.9	79,888	11,148
Salt Lake	4,730	149,635	31 5	115,996	57,138
San Juan	775	6,905	92.8	5,009	2,584
Sanpete	1,482	128,688	86 8	93,180	50,813
Sevier	772	55,008	71 3	45,536	20,816
Summit	722	65,583	90.8	34,513	31,055
Tooele	497	61,479	123 7	52,190	16,270
Uinta	405	38,015	93 8	34,071	14,065
Utah	2,628	151,160	57 5	133,215	80,206
Wasatch	560	22,783	40.0	20,184	14,825
Washington	344	9,288	27 0	8,208	6,058
Wayne	212	16,040	75.7	10,788	6,906
Weber	1,408	95,280	67.6	78,856	42,413

Forest Reserves.

NAME	LOCATION	ACRES
Aquarius	Garfield and Wayne	639,000
Bear River	Cache and Rich	267,920
Beaver	Beaver, Piute and Sevier	261,593
Dixie	Washington	465,920
Fillmore	Millard, Juab, and Sevier	399,600
Fish Lake	Sevier and Wayne	288,800
Glenwood	Sevier and Piute	173,896
Grantsville	Tooele	68,960
La Sal	San Juan and Grand	128,960
Manti	Utah, Carbon, Sanpete, Sevier, and Emery	777,020
Monticello	San Juan	214,270
Payson	Juab, Utah, and Sanpete	167,280
Raft River	Boxelder	117,203
Salt Lake	Salt Lake	95,440
Sevier	Garfield, Kane, and Iron	710,020
Uinta	Wasatch, Summit, and Uinta	2,187,550
Vernon	Tooele	68,800
Wasatch	Salt Lake and Utah	85,440
Total		7,110,472

Elevations of the Principal Places in Utah.

	ALTITUDES		ALTITUDES
Agassiz, Mount	12,450	Manti	5,530
American Fork	4,563	Markagunt	8,000 to 11,000
Bear River	4,498	Marysvale	5,830
Beaver City	5,970	Marysvale Peak	10,350
Beaver, Mount	12,085	Moraine Valley	9,000 to 10,000
Bingham Canyon	5,862	Mountain Meadow	5,741
Blue Gate Plateau	6,800 to 7,300	Mount Nebo	11,887
Brigham	4 305	Nephi	5,119
Camp Douglas	5,024	Ogden	4,307
Cottonwood	4,550	Ogden Peak	9,592
Deseret	4,600	Panguitch	6,550
Deseret, Mount	11,047	Park City	6,070
Emmons Peak, Uinta Mts.	13,624	Parowan Valley	5,000 to 6,200
Ephraim	5,543	Peale, Mount, La Sal Mts.	13,080
Eureka	6,464	Pleasant Valley	7,500 to 8,200
Ft. Duchesne	4,041	Provo	4,512
Gilbert Peak	13,687	Provo Peak, Wasatch Mts.	11,000
Goshen	4,542	Round Lake Valley	5,500 to 6,000
Grass Valley	6,200 to 7,500	Salt Lake City	4,366
Great Salt Lake	4,218	San Pitch Valley	5,200 to 6,200
Green River	4,080	Sevier	5,542
Gunnison	5 215	Sevier Plateau	9,000 to 10,000
Gunnison Plateau	7,000 to 9,800	Silver City	6,112
Heber	5,550	Spanish Fork	4,570
Horeb, Mount	7,831	Summit	6,574
Hot Springs Salt Lake Co.	4,219	Tooele	4,000
Indian Head, Tavaputs Plateau	9,810	Tooele Peak	10,396
Juab Valley	5,000 to 6,000	Uinta Valley	4,700 to 6,000
Kanab	4,025	Utah Valley	4,700 to 5,200
Lee Springs, Fremont Pass	6,883	Wasatch Peak	11,147
Lehi	4,550	Wasatch Plateau	8,000 to 11,000
Logan	4,507	Waas Mountain	12,319
Logan Peak	10,004	Wilson Peak	13,300
		Yampa Plateau	6,000 to 7,000

Irrigation in Utah in 1902, Government Report.

SOURCE OF WATER SUPPPLY	NUMBER OF IRRIGATED FARMS	NUMBER OF ACRES IRRIGATED	COST OF IRRIGATION SYSTEMS	LENGTH OF MAIN CANALS AND DITCHES, IN MILES
All sources	21,084	713,621	$7,303,607	3,891
Jordan River, Utah Lake, and tributaries	6,220	174,334	1,751,389	761
Sevier River and tributaries	3,324	127,770	700,097	751
Bear River and tributaries	2,008	135,572	2,343,236	466
Weber River and tributaries	2,690	78,302	782,813	416
Colorado River and tributaries, exclusive of Green River	1,453	37,335	445,750	388
Green River and tributaries	1,465	53,595	507,324	393
Independent streams	2,308	76,800	427,297	501
Snake River tributaries	85	4,122	21,060	28
Springs and wells	1,222	25,701	233,831	187

The Leading Manufacturing Cities of Utah and Some Facts Concerning their Industries, Federal Census of 1900 and Bulletin 37, 1905.*

CITY	YEAR	NUMBER OF PLANTS	NUMBER OF WAGE EARNERS	AMOUNT OF WAGES PAID	VALUE OF PRODUCT
Salt Lake City	1905	192	2,776	$1,703,841	$7,543,983
	1900	432	2,077	1,601,253	6,100,400
Ogden	1905	64	1,083	758,204	2,097,057
	1900	157	860	472,100	1,801,487
Lehi	1900	16	73	103,804	721,081
Provo	1900	57	204	105,428	431,120
Logan	1900	63	181	62,081	375,055
Brigham	1900	33	74	27,709	172,101
Springville	1900	17	14	6,860	95,482
Park City	1900	22	24	13,351	72,172

* Statistics for 1905 include only factory products; for previous census all products.

Some of the Leading Industries of Utah and the Value of their Products, from the Federal Census of 1900 and Census Bulletin 37, 1905.*

INDUSTRY	YEAR	NUMBER OF PLANTS	CAPITAL	NUMBER OF WAGE EARNERS	AMOUNT OF WAGES PAID	COST OF MATERIAL	VALUE OF PRODUCT
Total for state	1905	606	$26,004,011	8,052	$5,157,400	$24,030,827	$38,026,464
	1900	1,400	14,650,948	6,015	3,388,370	12,853,054	21,150,183
Smelting and refining copper	1905	5	3,584,788	1,416	1,016,052	5,133,990	8,408,056
	1900	..	....	..	....	....	....
Flouring and grist-mill products	1905	63	1,212,430	150	91,401	2,043,054	2,425,701
	1900	80	1,101,885	167	82,070	1,401,819	1,829,840
Cars and general shop construction and repairs by steam railroad companies	1905	7	522,140	1,248	964,301	826,678	1,886,651
	1900	10	496,140	908	630,076	604,907	1,306,591
Printing and publishing	1905	101	1,040,497	519	355,257	311,708	1,466,540
	1900	80	822,874	548	287,563	203,328	770,824
Beet sugar	1905	4	....	....	....	....	1,455,028
	1900	3	1,780,370	107	128,800	561,003	1,037,355
Confectionery	1905	12	401,176	335	102,090	688,032	1,004,601
	1900	24	154,503	163	57,357	224,307	442,044
Butter and cheese	1905	40	406,480	98	55,115	780,377	963,811
	1900	57	260,247	150	63,135	550,096	713,889
Canning and preserving fruits and vegetables	1905	18	927,862	360	99,300	506,176	801,058
	1900	8	304,258	141	37,565	211,270	300,340
Slaughtering and meat packing	1905	3	147,664	31	20,050	513,543	653,314
	1900	5	83,902	34	14,978	201,477	343,444
Malt liquors	1905	6	897,896	134	92,557	176,138	636,688
	1900	7	613,092	80	53,751	120,905	432,835
Woolens and knit goods	1905	12	646,207	455	137,405	337,242	504,732
	1900	11	507,531	285	91,280	140,012	288,700
Foundry and machine-shop products	1905	21	450,037	277	108,014	248,203	587,484
	1900	15	210,394	153	91,076	63,749	217,302
Bread and other bakery products	1905	28	353,018	191	90,133	280,845	541,655
	1900	20	200,862	107	46,041	142,149	201,313
Brick and tile	1905	39	438,476	201	172,508	68,270	345,806
	1900	40	171,357	249	89,245	32,666	186,449
Tobacco, cigars, and cigarets	1905	27	106,388	140	108,533	110,722	207,918
	1900	15	46,123	68	38,400	40,028	124,487
Salt	1905	5	612,679	68	43,027	51,362	230,097
	1900	5	646,850	59	23,702	31,750	130,488

* Statistics for 1905 include only factory products; for previous census all products.

The Principal Items of Utah's Wealth, United States Bureau of Statistics, 1900-1904, and Estimates of Local Bureau, 1906-1907.*

	1900	1904	1906	1907
(a) REAL PROPERTY				
And Improvements	$220,413,837	$258,505,074	$273,186,502	$280,482,652
Live Stock	22,202,400	20,435,227	20,043,123	32,854,376
Farm Implements and Machinery	2,922,550	3,508,244	3,036,091	4,105,013
MANUFACTURING				
Machinery, Tools, and Implements	5,217,208	8,470,645	10,007,310	12,910,057
Gold and Silver. Coin and Bullion	5,088,235	6,331,183	6,502,657	6,588,304
(b) Railroads and their Equipment	66,521,000	90,325,000	92,727,000	108,178,000
Street Railways, Waterworks, etc	14,101,485	17,732,895	19,503,600	20,488,057
(c) Personal and Other Property	66,130,200	82,270,747	90,349,075	94,385,080
Total	$412,656,095	$487,768,015	$544,011,757	$557,892,538

(a) Exclusive of railroad and other property, which in certain states is classed as "Real," but in the Census estimate wealth is referred to as "personal and other."

(b) Including telegraph and telephone systems, electric light and power stations, Pullman and private cars, and canals.

(c) Including products of agriculture, manufactures and mining; imported merchandise, clothing and personal adornments, furniture, carriages, and other kindred property.

(*) It may be noted that in the estimated value of live stock in 1906 as presented by the Department of Commerce and Labor there is a marked falling off from 1900, a decrease not borne out by data collected by the local bureau.

SUGGESTIVE QUESTIONS TO ACCOMPANY THE GEOGRAPHY OF UTAH

Size and Location. (1) In what part of the United States is Utah? By what states is it bounded? (2) How far is it from the Atlantic seaboard; from the Pacific? (3) When was Utah larger than it now is? Mention the states that have been given some of its original territory. (Use Fig. 4 to answer this question.) (4) What meridians and parallels form its present boundary? What is Utah's length and breadth in miles? (5) How does it compare in size with Colorado, Wyoming, New York; with New England; with Great Britain?

Surface. (1) What is a mountain? a plateau? a valley? a canyon? Do you find all these natural features in Utah? (See Fig. 3.) (2) How do the Great Wasatch Mountains divide Utah? Locate and describe them. What lies to the east of them? What to the west?

(3) How high is the plateau region? What great mountain system in the United States has a lower average altitude? What mountain groups rise above the plateau? (4) What large river in the southeastern part of the state is formed by what two other rivers? What world-famous canyon is made by this river? (5) Locate and describe the Uinta Mountains. (6) Where is the Great Basin? Describe it. (7) What kind of mountains do you find in it? Describe a block mountain. Define an uplift, a fault. (8) Name some of the highest peaks in Utah. (9) Find out what a glacier is. (10) How do we know that glaciers once covered the mountains and plateaus of Utah? (Study Fig. 8.)

Geology, Soils, Drainage. (1) Can you define erosion? weathering? detritus? and tell how they affect the surface of a country? (2) What is the cause of so many canyons and steep valleys in Utah? (Study Figs. 9, 10, 11, 12.) (3) Were there ever any volcanoes in Utah? (4) Was the surface of Utah always as elevated as it now is? What once occupied its entire area? (5) How was coal formed during the early period of uplift? (6) Have rivers had an important part in forming the surface of Utah? (7) Describe the soils of Utah and tell how they were formed. (8) What is meant by drainage? How is the drainage of Utah divided? (9) How is the plateau section drained, and what is peculiar about the drainage of the Great Basin? (10) Can you describe some special feature of the streams in southeastern Utah? (11) Give an account of the great fresh water lake that once occupied a large part of the Great Basin. How did a part of it become the Great American Desert, and why are two of the three small lakes remaining on its floor so salt? What are these lakes? (12) Describe the peculiarities of Great Salt Lake. (Study Figs. 17 and 48.) (13) Name the principal rivers in Utah and tell into what they flow. (14) What kind of rivers affords Utah fine water power? (Study Fig. 12.) What is meant by water power?

Climate. (1) Why is the climate of Utah dry and its annual rainfall small? How does Utah's rainfall compare with that of the whole country? of the Mississippi Valley? of the northern and southern Pacific coasts? (3) In what part of the state is the rainfall heaviest? where lightest? (See Fig. 20.) (In Fig. 19 you will find the record for the state.) (4) What can you say of the temperature of your state? What is its range? (Study the isotherms on Fig. 22.) (5) Tell how altitude affects both rainfall and temperature.

Plants and Animals. (1) Why is the vegetation of Utah varied, and why is it small in quantity though great in variety? (2) Mention the principal plants that grow in the arid or desert regions. How does irrigation affect vegetation? (3) Where are the forested areas? What can you say of the lumber supply in your state? How does it compare with that of Washington, Wisconsin, Maine, or the great Appalachian region? (4) What are forest reserves? How are they maintained? (5) Why is it necessary to have forest reserves? (Consult Figs. 2 and 23); (also the table on page 40). (6) Name the most valuable timber trees in your state.

History and Growth. (1) Who was the first white man to visit Utah? What famous explorer made it known to the world? (2) When and by whom was Utah first settled? What was their object in going there? Who was their leader? (3) What was the name first given to Utah? When was it admitted as a state? (4) What first attracted other settlers? When and where were gold and silver first discovered?

Irrigation. (1) Describe irrigation. When is it necessary in agriculture? (2) Why were the Mormons compelled to make use of it? (3) How many acres in Utah are now irrigated? How many miles of irrigating canals are there? (Consult Figs. 25, 27, and 35 and table on page 40.)

Agriculture. (1) Why is agriculture the chief occupation of the people of Utah? (2) What two methods of farming are pursued? (3) What are the advantages of irrigation, especially in growing fruit and sugar beets? (See Figs. 26, 33, and 35 in illustration.) How does Utah rank in the last-mentioned product? (4) Describe dry or arid farming. (5) Mention some of the principal farm products of Utah. (See table on page 40.) (6) What is an "agricultural experiment station"?

Stock Raising. (1) Why is stock raising an important feature in the agriculture of Utah? What natural conditions make it especially fine for sheep raising? (2) How does Utah rank among other states as a producer of wool? Can you mention any states that raise more? What connection has this industry with Utah manufactures? (Consult Fig. 49.) (3) What farm animals rank next to the sheep in importance? (4) Where are the dairying interests chiefly located? What do you know about bees and honey in your state? (In answering the questions concerning live stock consult Fig. 36 and table on page 40.)

Minerals and Mining. (1) Why is mining the greatest source of Utah's wealth? Tell something about its

enormous ore deposits. (In Fig. 39 you will learn in what parts of the state the different minerals are located.) (2) What are the "precious metals"? How does Utah rank among other states in their production? (3) How is mining usually carried on? How is the metal separated from the ore? (In Figs. 41, 42, 44, 45, and 46 you will find several mining processes indicated. Consult Fig. 43 for the value of the principal minerals and page 40 for the value of the total production for twenty-five years.) (4) What is the extent of the iron and coal deposits? What will be their chief value to the state? (Consult Fig 39 and table on page 40.) (5) Where are gilsonite and elaterite found? For what are they used? (6) Name some other mineral products of your state. What large industry depends on clay? (7) Mention some kinds of building stones found in your state. Of what is the temple at Salt Lake City built?

Manufactures. (1) Why did the people of Utah early start manufacturing industries? Have these industries increased rapidly? (Fig. 47 shows you the rate of progress made.) (2) How many persons and what per cent of the population are engaged in these industries? (See Fig. 29.) (3) What two resources of the state make extensive manufacturing possible? (4) Name some of the chief industries of your state. (5) What are the leading manufacturing cities? (Consult tables on page 41.)

Transportation and Trade. (1) What is meant by transportation? How many kinds of transportation can you mention? Upon what kind is Utah wholly dependent? (2) What was the condition of Utah before the railroads were built? What have they done for the state? (3) What manufactured articles are shipped over the railroads? Learn all you can about railroad construction. (Figs. 51 and 52 show two of its difficult features.)

Government. (1) Can you tell how many kinds of government there are? What kind is discussed in this book? (2) Into how many departments is the state government divided? Name them. How is Utah represented in the general government? (3) Find out how the expenses of government are provided for, and what is meant by "assessed valuation of property."

State Institutions and Education. (1) Name the three classes into which the public institutions in your state are divided. (2) Mention some features of the public school system. (3) Are schools of mines and agriculture of much benefit in Utah? Why? (4) Name the leading private schools in your state. Also the leading state schools. (Consult Fig. 56.)

Population. (1) How many people live in Utah? How many lived there fifty years ago? What part contains most of the people? Why? (See Fig. 61.) (2) How does Utah rank in population among the states of the Union? (3) What is meant by density of population? What is the density of Utah? How does it compare with Massachusetts, New Jersey, California, and Nevada? (4) How many of its inhabitants were born in foreign countries. How many are native to the state? (Use Figs. 58, 59, and 60 in answering these questions.)

Cities and Towns. (1) In what parts of the state do you find most of the cities and towns? Why? (Consult the population map, Fig. 61.) Why are there more small towns in Utah in proportion than large ones? Why are these towns generally market and trade centers? (2) Name the principal cities of Utah and locate them. (3) Why is Salt Lake City the metropolis of the state? Name some of its interesting features, and describe its situation. What is its importance as a manufacturing city? (4) What rank does Ogden hold in the state? To what does it chiefly owe its importance? What of its manufactures; its schools? (5) Tell something about its great electrical plants. Mention other cities in the state that have large electrical plants. (6) Give some distinguishing feature of Logan, Provo, Park City, Lehi, Bingham Canyon, Eureka, and St. George. (7) Name and locate the chief mining and market towns in the state. (8) What city was once the capital of the state?

SUGGESTIONS FOR COLLATERAL READING

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